News of the Industry Begins Page 746

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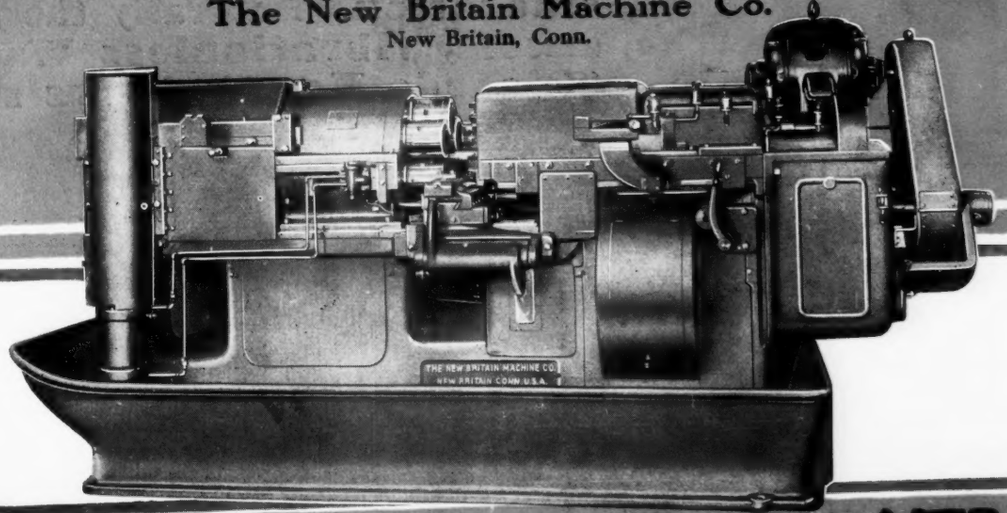

NEW BRITAIN NEW-MATIC - CHUCKING MACHINES -

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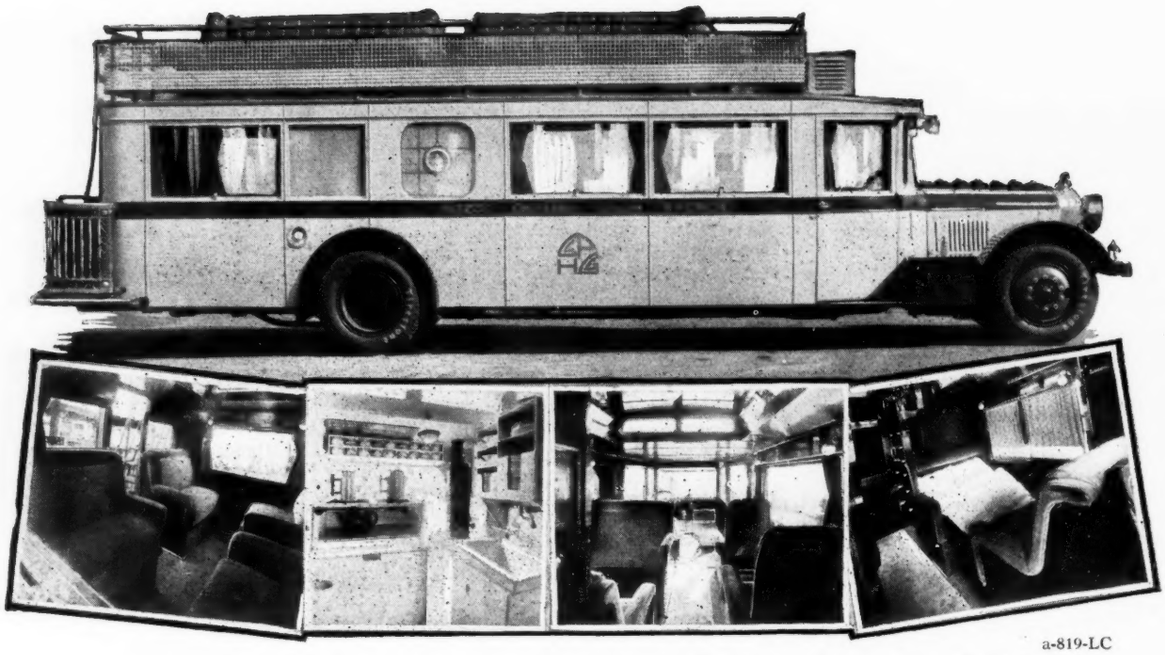

a-819-LC

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AUTOMOTIVE INDUSTRIES
VOLUME 58 *Philadelphia, Saturday, May 12, 1928* NUMBER 19

Truck Field Beckoning to More Passenger Car Producers

Tendency few years ago was to abandon truck lines but policy is being reversed now due to demand for de luxe high-speed delivery service and several other factors.

By John C. Gourlie

SOME interesting developments are promised by the recent introduction of truck lines by manufacturers formerly concerned exclusively with passenger cars, and the imminence of further announcements of this character. Combination car and truck production and distribution, it is evident, is going to become increasingly the rule, and this is a rather unusual reversal of policy for the industry, since a few years ago the tendency was to abandon truck lines.

Several influences have brought about this change in sentiment on the part of executives in some of the factories. There has been no radical development in the factors surrounding truck production and merchandising to cause a sudden decision to add a commercial vehicle line, but on the other hand, there has been a gradual growth in importance of certain considerations that place the chances for profit in truck lines in a more favorable light. Among these may be detailed the following:

1. Better roads.

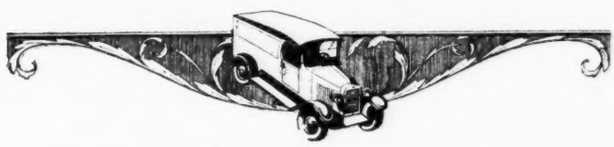
The great improvement in the highway systems in recent years, reducing the strain on automotive vehicles in most sections of the country, has, it is felt, enhanced the feasibility of producing light and medium duty commercial vehicles with a great number of parts interchangeable with those used in the passenger car line. There is room for argument on this point, but the thought no doubt has had a strong influence on factory policies.

2. The demand for de luxe high-speed delivery service.

Although questions of expediency have perhaps dictated some of the announcements of six-cylinder trucks in the last year or two, there is unquestionably a demand for more power and speed in delivery vehicles and this is a field in which the experience of engineers familiar with passenger car developments will count for something. Many believe, futhermore, that the truck industry is on the threshold of a period when appearance will be stressed as much as mechanical specifications are at this time.

3. Conspicuous truck-passenger car successes.

The value to a few passenger car companies of a truck line has been thoroughly demonstrated. Not only has there been profit for the manufacturer, but evidently a most satisfactory business for good dealers in territories with a favorable truck market. In one or two cases trucks have been a source of volume and of earnings at a period when the car producing divisions of the

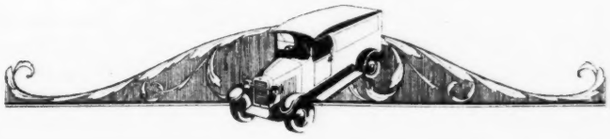


Passenger Car Manufacturers Producing Commercial Vehicles

Chevrolet	Pierce-Arrow
Dodge	Reo
Ford	Studebaker
Kissel	Velie

Willys-Overland

Other announncements of truck lines by passenger car companies may be made this year. General Motors, through the General Motors Truck Co., distributes commercial vehicles with some parts units turned out by the passenger car divisions. Stutz distributes the Pak-Age-Car.



company have been undergoing extensive changes that held up output and sales of passenger vehicles.

4. Car dealers have been handling other truck lines.

The fact that some car dealers have voluntarily taken on truck lines of other companies where the car factory did not produce trucks has not been faced with equanimity by company executives, who felt that they might better be supplying their dealers with trucks and earning a profit therefrom.

5. Demand from dealers and distributors.

Some factory executives report a good deal of actual demand from dealers for truck lines. While such statements may be subject to discounting there is no doubt that many enterprising dealers feel that they can make money with trucks. There is a particularly urgent call for trucks from foreign distributors, many of whom really have automotive department stores and want as many lines to handle as possible. As has been frequently noted, furthermore, trucks have been making more important gains in export trade recently than have passenger cars. There is a huge market untapped overseas.

Unseen Forces at Work

Although, as has been pointed out, the force or pertinence of some of these influences may be questioned, it is patent that most of the successful passenger car companies feel that they ought to have some share in the truck business, amounting in units to about 1/7 of annual motor vehicle sales and to considerably more in point of dollars. Experience with trucks in the past has not been particularly satisfactory for many of the companies, however, so it is plain that some forces have been at work to change the viewpoints of factory executives.

Obviously if the newcomers in the truck field, with powerful and far-flung distributing organizations, make a real effort to merchandise trucks, the competition in this field, or at any rate in the tonnage ranges covered, will be greatly intensified. As conspicuous successes in truck merchandising have not been numerous in the past, profitable volume in truck sales is not going to be any easier to obtain.

On the other hand, the big passenger car organizations have an initial advantage that may well result in an actual broadening of the truck market. Large dealer organizations, penetrating to the rural communities where truck representation tends to be meager, will be actively selling commercial vehicles where such efforts have been made by only a very few companies in the past. Farms are logical enterprises for using trucks and the market should benefit by more intensive cultivation.

Future Outlook Alluring

As was shown by Donald Blanchard in *Automotive Industries* of March 24, 1928, the truck industry statistically is in good condition, the trend curves still giving promise of a relatively greater rate of expansion than can reasonably be expected in passenger cars. Effective merchandising should hasten the more widespread adoption of commercial vehicle transportation.

Thus increased competition may bring its compensation. The competitive factor is not to be slighted, however. The keen struggle for business has already been responsible for a trend paralleling the entry of additional companies into the field—the tendency to build more or less complete lines of trucks covering the tonnage ranges from light to medium duty.

This has been done primarily to place dealers in a better position to meet the specific transportation requirements of customers and to give a broader coverage of the market. This points the way to one of the many fundamental differences between truck and car selling, since a truck owner may have vehicles widely varying in cost and capacity whereas a passenger car owner tends to be restricted to a rather narrow price range.

There must be numerous other differences, or else more passenger car companies would be pushing truck lines and earning profits thereby. The disparity in this respect is emphasized by the fact that two of the most important companies producing both cars and trucks are selling about one commercial vehicle to five passenger cars, against about one to seven for the industry as a whole.

Success with trucks is not readily to be won. Experience has amply shown that there is an important initial obstacle to be overcome—the inertia of the dealer organization. Most dealers are unconvinced of the desirability of handling truck lines and gentle but firm pressure has to be exerted for quite a period before this attitude can be changed. The dealers, in other words, have to be sold before the public can be sold.

It has not generally been the practice, in adding trucks to passenger cars, to make an immediate demand on the dealer organization to go into the new field. The dealers are urged, but not required at once to start merchandising the commercial vehicles. Here again there is a divergence from the policy pursued with the introduction of new passenger car lines by established companies.

The frequent unwillingness of passenger car dealers to merchandise trucks is considered by many observers to be due to unfamiliarity with the profit possibilities in commercial vehicles. From the dealer's standpoint there is more gross profit per unit in trucks and there may be an opportunity to spread the sales and service overhead now being absorbed by passenger car operations alone.

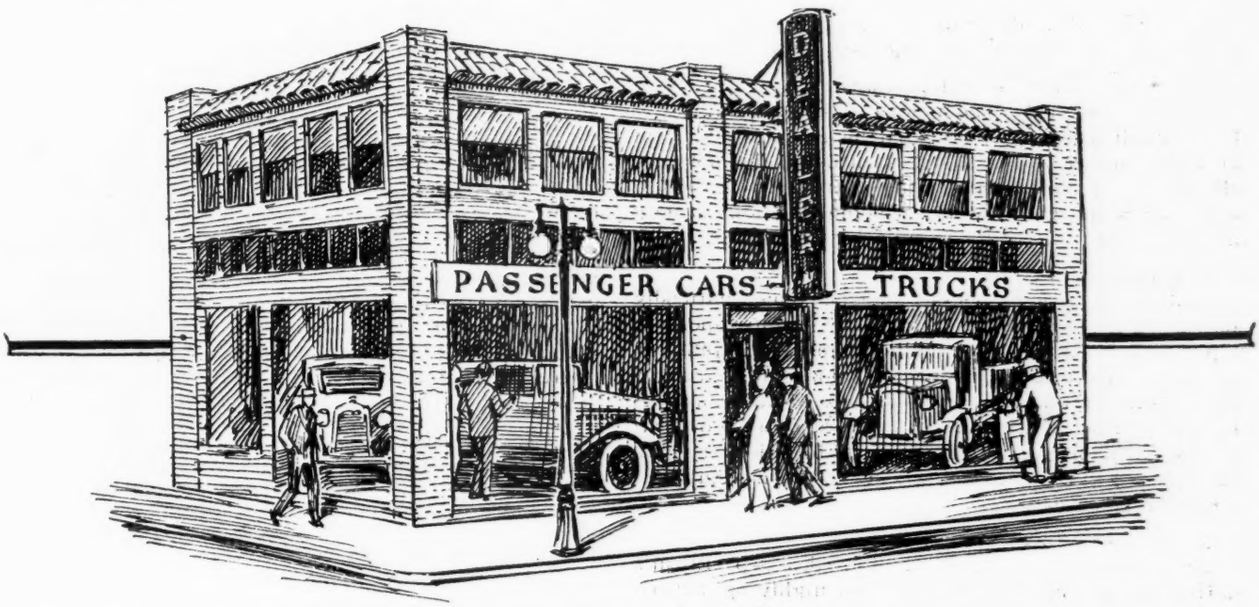
Money in Fleet Orders

The possibility of obtaining fleet orders is a glittering prospect for the dealer and his salesmen, and for this reason if remuneration is on a comparable commission basis a good truck salesman is likely to make more than a good passenger car salesman, except, perhaps, where fleet sales are largely made by factory branches.

A customer once won for a dealer, even if not a fleet owner in the usually accepted meaning of the term, is likely to remain a source of orders not only for replacements but for additional units as the demands of the business grow. A passenger car buyer is more readily enticed to a different line by minor considerations.

Truck prospects can more easily be seen during business hours than passenger car buyers, a not inconsiderable advantage when a dealer is handling both commercial and pleasure vehicles.

Where dealer relations are concerned, an important point is whether separate sales and service organizations are desirable, or are to be required by the factory. It is generally held that this separation is most necessary if trucks are to be successfully sold in proper volume where a favorable market exists. The practice of one of the best companies selling delivery cars is to require separate departments of dealers whose potential market is calculated at more than 100 units a year. Of course where heavier and more expensive units are concerned, the volume to justify a separate department is lower.



Segregation of truck sales is considered more important than segregation of truck service. Truck selling is a highly specialized job and is likely to become more so; whereas the tendency is to have more truck parts interchangeable with those on passenger cars in the same line.

Dealers in most cases will probably not be particularly receptive to the idea of establishing a truck department with a new sales force. The need for vocational selling; for an intimate knowledge of truck operation potentialities; and for having a greater mechanical knowledge, not only of the line being sold but of competing lines, combine to make specialized selling almost obligatory. A dealer who will attack his problem wholeheartedly, facing these facts, ought to benefit thoroughly thereby.

Another important point of factory policy in relation to dealers concerns the carrying of stocks or at least chassis for display. The multiplication of truck models has complicated this question and has raised considerably the investment required of the dealer. The passenger car companies doing a large business in trucks have generally followed the policy of insisting that direct dealers carry display models, associate dealers being relieved of this necessity. It is held that dealers cannot sell trucks without models for display. But of course the newer companies in the field cannot at once lay this heavy requirement on any but the largest dealers and distributors with a large market to serve.

There has been some consideration of the feasibility of having central stocks in distributing areas from which trucks could be sent out to dealers on a more or less regular schedule affording frequent opportunities for brief periods of demonstration and display. The feeling seems to be, however, that this is a rather costly policy and perhaps only feasible where very large units are involved.

Selling a Certain Ratio

Dealers may fear that they will have to sell a certain ratio of trucks to cars. Although this ratio can be fairly accurately predicted, for the entire production, by a factory well established in the business, the national ratio has little or no local significance. A good deal of planning and territorial analysis is involved in the fixing of quotas for dealers, and the passenger car capacity of the dealer's territory is not a reliable index of the potential truck market.

The procedure found satisfactory by the older companies is to fix quotas for individual dealers on the computed potential absorption by the territory of trucks in a given tonnage class, setting a percentage of the potential for the class as the year's quota. This, to be sure, is the plan frequently followed for car quotas and intelligently applied it ought to work as satisfactorily for trucks.

The Used Truck Market

Used trucks will require a good deal of attention from manufacturers and dealers adding commercial car lines. The factories, indeed, should be prepared to give the distributing organization a clear picture of the difficulties ahead at the time of inaugurating the program. Used trucks are obviously in a different category from used cars, since a commercial vehicle is infrequently turned in for trade that has any economical transportation value left. It is more often than not of no utility whatever except for junk, the only favorable point being that this can be pointed out to the prospect by a good salesman without causing offense.

This aspect of truck selling is partly responsible for the net prices to dealers established by some manufacturers, as well as trading allowances in other instances. The various price policies are the subject of much difference of opinion, but it is plain that an organization new to the field, yet believing itself committed by its merchandising policies in the passenger car branch to list prices and no allowances, has some special problems to overcome, and a good deal of educational work among the distributing organization to accomplish.

Some of the policies followed by the car producing companies that have built up a good truck business on a sound foundation have already been referred to. Among others are:

1. Specialized engineering design.

Although passenger car parts have been used in the trucks, and will continue to be used, the desirability of a separate truck engineering staff to improve the vehicles for the needs of commercial transportation has been recognized. Overloading of trucks is as much a problem as before—and one not present in passenger car engineering—while demands for greater speed in commercial vehicles are placing design at a high pre-

mium. The sales advantage of improving the appearance of trucks is also becoming recognized.

2. Separate truck sales departments.

Not only have sales managers for the truck divisions been established, but entire departments, including field men for contact with dealers. Constant sales helps of all kinds are required and perhaps more so at the beginning, when the groundwork is being laid and dealers are being sold on the line than later on.

3. Vocational studies.

Although vocational selling analysis comes naturally under the sales department, it really is an important separate activity by itself, and a completely unfamiliar one to an organization hitherto specializing in passenger cars. National and territorial analysis of vocations has been done rather extensively by the successful organizations in the field, although in the lighter delivery cars much of the selling naturally has been on what was largely a price basis.

4. Transportation engineering.

This again is an aspect of the sales department's duties, but a comparatively new and highly specialized activity. Vocational studies have shown the need for particular body types and equipment for particular services, and the consequent multiplication of models and optional equipment has led to the institution of sales engineers to advise dealers and operators in the choice of vehicles adapted to various operations. Dodge Brothers, Inc., recently announced that its truck division was offering more than 1900 different combinations of chassis, body and equipment.

It must be recognized, however, that the development of special bodies and equipment clashes with the need for attaining volume production to keep down prices and constant study to harmonize these requirements is necessary. The specialty manufacturers can be of great assistance in this connection.

It is apparent, then, that there is a great deal more to the truck business than is involved in the placing of a line of chassis on the market. Truck merchandising has progressed from the period when the horse was the principal competitor through the era when price and specifications were the main reliance to a time where good design and appearance and a fair price must be backed by the most thorough sort of vocational analysis and transportation engineering. It does not take a soothsayer to predict that the companies which are to be successful in the forthcoming period of intensified competition will be those which regard trucks not as a side line but as an essential part of the business requiring constant, aggressive merchandising.

New British Variable Pitch Propeller

A NEW variable pitch propeller for airplanes was described in a paper presented to the Royal Aeronautical Society of Great Britain at a meeting on April 12, the authors of the paper, Dr. H. S. Hele-Shaw and T. E. Beacham, being the inventors of the device. The propeller has been developed to a practical state by the Gloster Aircraft Co. and fitted to a number of different models of plane. The first design to be actually applied in practice was that for the Jupiter engine.

The pitch of the blades in the propeller is varied by means of a double-acting hydraulic piston operated by the oil pressure from a variable stroke pump driven by the engine. The stroke of the pump is in turn controlled by a governor, also driven by the engine, so that whatever the air conditions may be, the pitch of the propeller sets itself so as to keep the engine running at a constant predetermined speed.

Although the apparatus is automatic, the speed at which the governor operates can be altered by the pilot within certain limits by means of a small control lever. In other words, the pilot has it within his power to speed up the engine and obtain extra power in an emergency, and also, on the other hand, to reduce his engine speed so that he may cruise at full throttle, this, of course, being the condition for minimum fuel consumption per b.hp. developed by the engine. The pilot control lever alters the force on the governor spring and consequently adjusts the speed at which the governor operates.

Principle of Operation

The principle of operation of the variable pitch propeller is identical with that of the hydraulic steering gear with the addition that the control is made automatic. An important matter insisted upon by the Air Ministry is provision for any possible failure of the hydraulic system, for instance, if in a war machine the pipes were shot away. It is claimed that this condition is satisfactorily met in the particular propeller referred to, together with the other two vital conditions of light weight and reliability. It may be added that one of these propellers has been thirty hours in flight at Farnborough—where it is being tested by the Air Ministry officials—without any suggestion of breakdown.

In the discussion of the paper (as reported in *The Engineer*) several speakers raised objection to the great weight of the variable pitch propeller, but the authors made the statement that this would be reduced in later designs. Mr. Lynam, who is in charge of the Propeller Section of the Royal Aircraft Establishment, said that a great deal of the gloss was taken off the variable pitch propeller proposition by the weight. In many cases that annulled the advantages to be gained, and despite the success of the Gloster Hele-Shaw-Beacham propeller, he was not yet convinced that a very strong case could be made out for the variable pitch propeller, in general, for heavier-than-air craft. A good case, however, could be presented for this type of propeller on the airship. It appeared that the variable pitch propeller stood the best chance on geared engines when propellers of large pitch and diameter ratio and large surface were used. Mr. Lynam's remarks may be summarized by saying that unless by using a variable pitch propeller—and taking the weight of the propeller into account—we can obtain more power from the engine, and unless the additional power is gained at the rate of, say, 1 hp. for 2 lb. weight, we should do better by putting that weight into the engine and using a fixed propeller.

One of the things necessary, he said, was a metal for the blades very much lighter than was available today. The Gloster propeller for the "Jupiter" engine weighed about 180 lb. as against 100 lb. for a fixed propeller of the same size with substantially the same blades—solid duralumin. An increase of 80 per cent. in the weight was caused by the introduction of the mechanism for varying the pitch of the blades. He did not believe any form of solid construction would ever give light enough blades; hollow construction would have to be adopted, at any rate, for such large engines as the "Jupiter." Another means for reducing weight was to depart from the practice of attaching the blade rigidly to the center. If the blade was hinged to the center, it became very much lighter.

Just Among Ourselves

Human Progress Based on Formulae

IT is more or less characteristic of engineers to try to correlate experience in terms of formulae. Such attempts as have been successful even on a purely quantitative basis have furnished the basis upon which present-day material civilization has been built. Once the orderly relation between various factors in any problem can be established, and incorporated in a formula, the minds and energies of men are released for further speculative thinking and investigations into yet unknown regions of fact and fancy. This urge to get things into formulae, then, must be recognized as being basically a thoroughly sound idea, deserving of commendation and encouragement.

* * *

Tools for Achievement of a Practical End

BUT the development of a formula is not work for a child nor for a casual worker in the physical or psychological sciences. While one correct formula may form the foundation of a century of new progress, one incorrect formula, generally accepted, may impede progress for two centuries. The formula, then, which intrigues the average as well as the engineering mind by the relief which it brings from the necessity for thinking, is sometimes to be taken with moderation. The successful engineer or executive is the one who can take his formulae or leave them alone. And at best, it semes to us, formulae are tools to be used in the achievement of a practical end, rather than boundaries designed to circumscribe thinking on the particular subject to which they apply. If Einstein wants to know the size of rug needed for his living room, it is our guess that he measures the room with an ordinary everyday tape measure or rule just as you or I would. But that fact does not inhibit his thinking and discussing and even proving that the resulting measurements are not fundamentally what they seem and what we have for a long time believed them to be.

* * *

Formula Doesn't Seem Feasible Here

THESE ramblings are more or less the result of having had a number of letters from production men recently commenting on the possibility of some sort of formula by which to determine when old machine tools should be replaced and new ones bought. Several have expressed the wish for some such formula—two or three formulae have been evolved as a matter of fact. The balance of thought at the present time, however, would seem to be on the side of those who feel that a formula, although desirable, is not feasible and probably isn't going to be feasible as the sole basis for determining tool buying for any discernible period in the future.

* * *

Philadelphia Gets Reputation for Speed

NO more can Philadelphia be branded as a slow town; never again can the jokesters and the vaudevilists wise-crack about the tortoise-like qualities of the Quaker City without laying themselves open to the merry ha-ha. Quiet, sandy-haired Ray Keech and J. M. White, a manufacturer of automotive cable, have changed all that. These two Philadelphians have brought to our home town a reputation for speed that has been surpassed by no other town in the country. Keech's driving of the fastest mile ever achieved by any land vehicle in the car designed and built by White is now automotive history. We never knew what a fast crowd there was down here until we read about the achievement of these two, although in our own driving about town, it is true we sometimes suspected that some of our fellow automobilists had mistaken Chestnut St. or Walnut St. for the beach at Daytona.

* * *

Half a Mile to the Gallon

WE had a visit from Keech the other day and spent an interesting hour listening to his modest comments on his experiences. Naturally we asked him if he thought his own record could be broken. He does; but he is confident that it can't be broken before next year, because the beach is not in proper condition for high speed trials more than about two months of the year. Certainly the White design wasn't originated with fuel economy as a primary consideration; the giant racer, Keech said, consumed 2 gallons of gas to the mile. Practically nothing was done to it after it got down to Daytona, he said, except that the spark plugs were changed. That took nearly half a day, however, because there were 72 of them. Keech has taken over Frank Lockhart's contracts and may drive his first Indianapolis race in the car which Lockhart had planned to race there last year. Another car entered in this event by the Lockhart estate will be driven by Anthony Gulotta.—N.G.S.

Mack *Truck* Engines Are Redesigned to Increase *Compression*

Cylinders now cast in single block and aluminum cylinder heads are separate castings. Pistons also aluminum. New vaporizer used. Oil filtrator adopted.

By P. M. Heldt

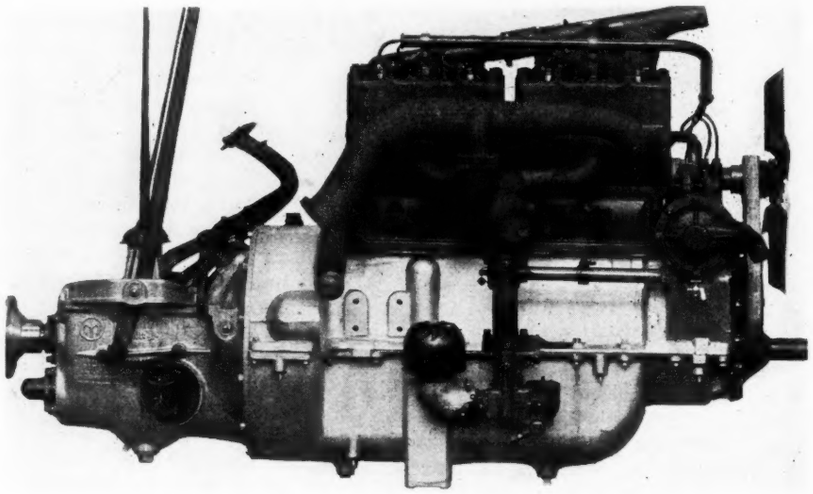
NUMEROUS important changes have been introduced in the engines of Mack trucks during the past year. The International Motor Co. does not follow the practice of announcing new models periodically, but introduce improvement in design or manufacturing methods as soon as they are developed or when conditions in the works are most favorable, and some of the changes to be described have been embodied in trucks leaving the works for some time, while others have been introduced in production only quite recently.

The Mack company manufactures three chassis for trucks and tractors, viz., the AB, which serves for trucks of 1½-2 and 2½-3 ton, and for a tractor of 5-6 ton rating; the AK, which is made only in the form of a 3½-5 ton truck, and the AC, which serves for trucks of 3½-5, 5½-7 and 7½ tons and tractors of 7-10, 11-14 and 15 tons rating. All three chassis have four-cylinder engines of very similar design, the cylinder dimensions being 4¼ by 5 in., 4⅝ by 6 in. and 5 by 6 in. respectively.

Higher Compression

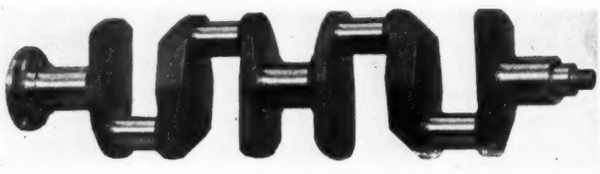
The engines have been redesigned for operation at higher compression. From the point of view of passenger car practice the compression figures appear still quite moderate, but it must be remembered, first, that the bores are a good deal larger than those of passenger car engines and, second, that the truck engine operates at a higher average load factor than the passenger car engine. The compression ratios are 4½ to 1 in the AB model; 4.6 to 1 in the AK and 4.2 to 1 in the AC, the actual gage-pressure compressions at 1000 r.p.m. being 85, 85 and 80 lb. p. sq. in. respectively.

Redesign of the engines was started upon largely with a view to adapting them to present-day fuels, and this involved other changes besides an increase in compression ratio. Until recently the cylinders of the AC engine were cast in pairs with integral heads, but the cylinders of all models are now cast in a single block and the cylinder heads are separate castings. These cylinder heads, moreover, are cast of aluminum and in pairs, there being two head castings on each cylinder block. In the old engine with integral cylinder head the valves were introduced through openings over the valve seats that were then closed by valve caps. These valve caps, of course, were the least effectively cooled part of the combustion chamber wall and limited the compression ratio that could be used.



Valve side of Mack Model AB engine, showing manifold system and vaporizer

In their endeavor to increase the compression without running into detonation troubles, Mack engineers did not stop at eliminating the valve caps, but they also adopted aluminum cylinder heads and aluminum pistons. The subject of aluminum cylinder heads was discussed in these columns recently, and it was pointed out that their chief value lies in the fact that they insure a better equalization of temperature, thus eliminating hot spots. Application of aluminum cylinder heads to engines of such large bore as these involves certain difficulties, however, which are due to the difference in the coefficients of heat expansion of cast iron and aluminum alloy. Aluminum expands about twice as much as cast iron for a given temperature rise, and if the head is made quite light it is likely to "buckle" and back away from the gasket at certain points, causing the gasket to be blown out. In order to eliminate troubles of this kind, the Mack cylinder heads are made in two castings, the depth of the head is made unusually large, each

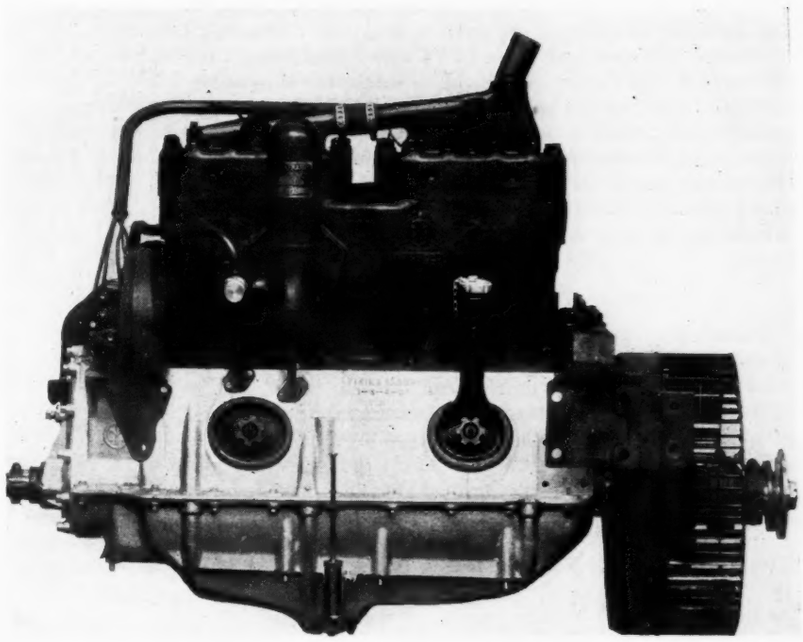


Three-bearing, case-hardened crankshaft of the AB engine, with integral counter weights

casting is held down to the block by 15 large size studs with nuts of extra length on top of large-diameter, heavy steel washers, and considerable metal is put into the bosses through which the studs pass.

Combustion chambers are now of the turbulence type. The cylinder head comes close to the piston head over two-thirds of the area of the latter and has its greatest depth over the edge of the cylinder bore.

A new vaporizer is used on the engines, which is combined with the inlet manifold. This consists of a chamber through which the combustible gas must pass on its way to the engine and which is completely jacketed by exhaust gases. All of the tubes conducting the gases into and out of this vaporizer are circular in section. At the bottom the vaporizer connects by a flange to the governor housing, which contains a butterfly valve. The connection from the exhaust manifold to the jacket of the vaporizer is made by a very short length of tubing which is cast integral with the inlet manifold and is flange-bolted to the exhaust manifold. The outlet for the exhaust gases from the vaporizer is by a small exhaust pipe independent of the main exhaust pipe and which leads to the muffler. This separate pipe to the muffler was found necessary in order to get sufficient heating; merely shunting the vaporizer jacket across a section of the exhaust pipe did not result in sufficient circulation through the jacket.

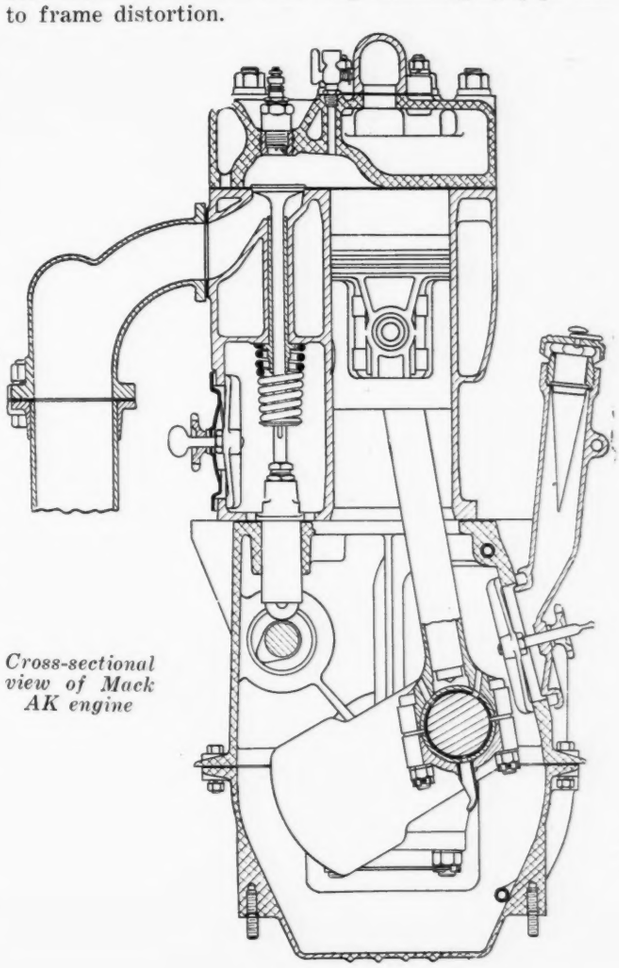


Left side of Mack Model AC engine, showing block cylinder castings, pair-cast aluminum-alloy heads and installation of H-W filtrator

The vaporizer above described is an improvement over a different design previously employed by Mack. It differs from the latter in having only circular passages and more positive circulation of exhaust gases, and in that its walls are thinner and contain much less metal, with the result that the heat lag in case of load variations is much reduced.

Inlet Manifold Bolted

The inlet manifold is now rigidly bolted to the cylinder block, instead of being held frictionally, while the exhaust manifold is held in place by bifurcated clamps which are firmly bolted to the block. These clamps take the full weight of the manifold, yet allow slip at the port gaskets to allow for expansion with increase in temperature. Both the main exhaust pipe and the exhaust pipe from the vaporizer jacket contain a short section of flexible metallic tubing. This insert of flexible tubing is protected on the inside by a bushing formed integral with one of the sections of the exhaust pipe, so the flame cannot directly impinge upon the packed flexible tubing; its object is to protect the manifold from strains due to a long overhanging pipe and to frame distortion.

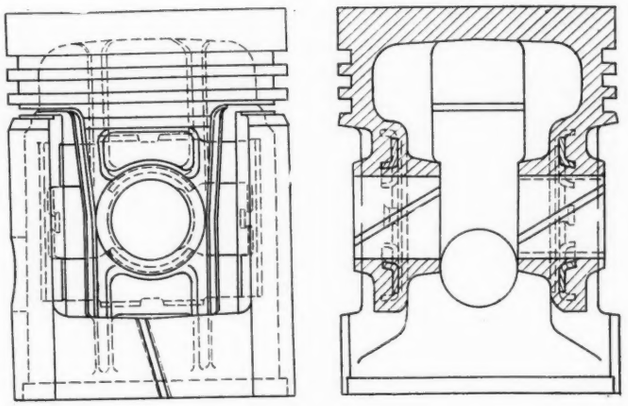


Cross-sectional view of Mack AK engine

Data on Mack Truck Engines

	Model AB	Model AK	Model AC
Bore and stroke	4½ x 5	4⅝ x 6	5 x 6
Governed hp.	46 at 1450	65 at 1400	66 at 1175
Maximum hp.	54	70	77
Compression ratio	4.5	4.6	4.2
Comp. at 1000 r.p.m.	85	85	80
Max. torque, lb.-ft.	170	262	320
Length of conn. rods	12.5	15	15
Length of pistons	6	5½	6-13/16
Wt. of recipro. pts.	5.46 lb.	7.11 lb.	9.42 lb.

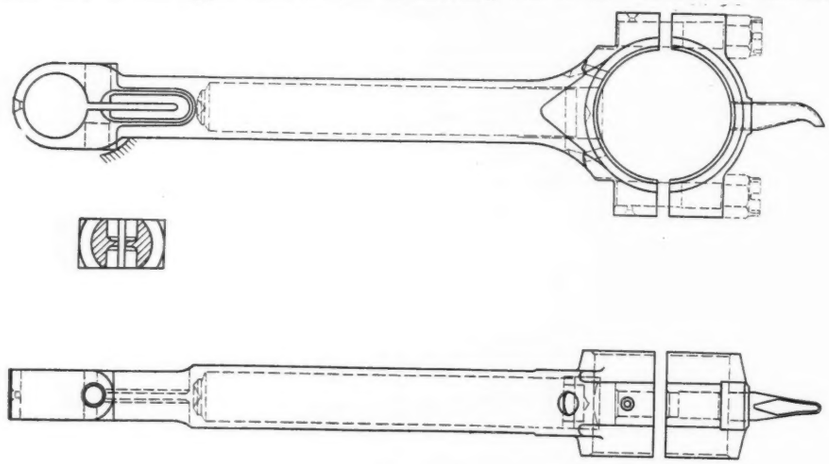
Pistons are now made of aluminum alloy and are of the invar-strut type. The skirt is practically separated from the top end and there are large reliefs cast over the ends of the piston bosses. The skirts are diagonally split and the split is bridged by metal on the inside; in other words, slots are milled in the skirt along helical lines where there are ribs on the inside of the casting. Three narrow rings are fitted above the piston bosses, the lowermost being an oil ring, from the groove of which the oil returns through drain holes to the crankcase.



The aluminum-alloy invar-strut piston

Piston Pins Same as Before

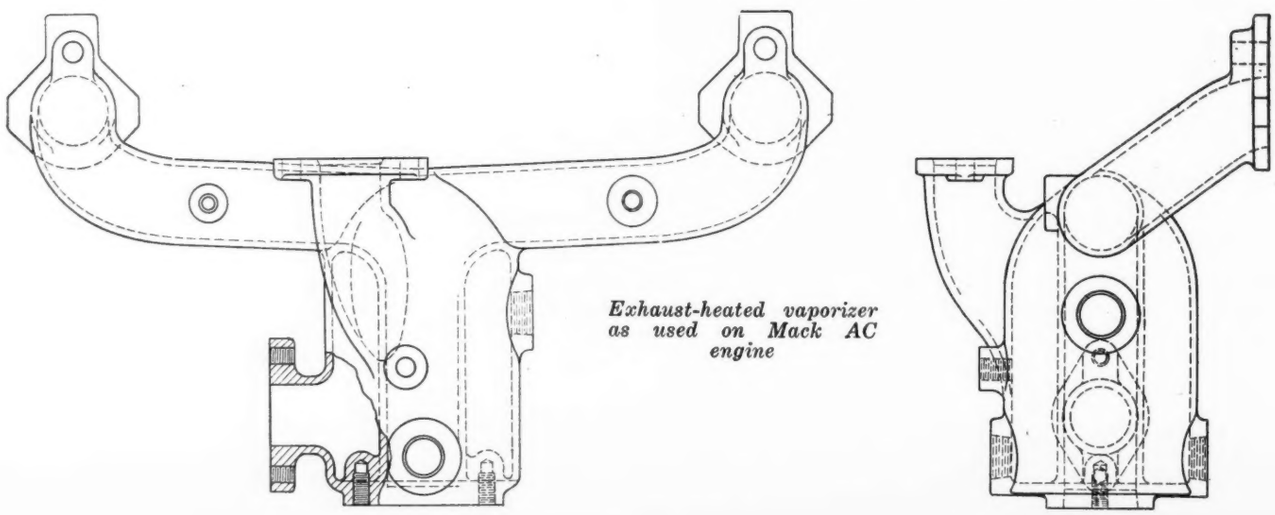
Piston pins are of the same type as previously used; that is, they are tapered out from both ends. These pins are finished by grinding and lapping to tolerances of 0.0002 in. with respect to diameter, roundness and straightness. Prestwich fluid gages are used for inspecting them, which indicate to ¼ of one-ten-thousandth inch. The pin is clamped in the upper boss of the connecting rod, the pinch bolt passing through a notch in the pin, thus positively preventing drifting. The slot in the upper end of the connecting rod is in the shank portion so that the upper boss forms a closed loop.



Two views of the tubular connecting rod

The piston pins have a bearing directly in the piston bosses. Evidently the high degree of accuracy insisted upon in the case of the piston pins would be of no use if the holes in the piston bosses were not finished to an equal degree of accuracy. These bearings are finished by diamond-boring, using a single-point, diamond-tipped fly cutter revolving at a speed of 3600 r.p.m. The surface of the bore being very smooth, it is not necessary to make the pins a push fit; they are made a free-running fit and the pins can be turned in the bearings by the friction of the finger.

Another essential to smoothness of operation of the crank train is absolute parallelism of the bearings at opposite ends of the connecting rods. Mack engineers claim it is practically impossible to keep an I-section connecting rod straight while taking it out of the engine for repairs, and they have therefore gone to the tubular-section rod. The rods are made in the form of solid forgings and are first machined all over, the shanks being ground. Then the bosses are bored and finished and the caps are sawed off. Next the shank is drilled out in a gun drill and the hole at the crankpin bearings is plugged, the plug being welded in place. Both holes in the connecting rods are ground. The caps are assembled with solid steel shims, and are held in place by two bolts on the AB model and four on the AK and AC models. Bronze-back, babbitt-lined bear-



Exhaust-heated vaporizer as used on Mack AC engine

ings are used at the lower end and are ground on the outside to insure good contact with the rod and consequently efficient cooling. The halves of the bearings are not pinned but after being peened in place the edges along the joint are milled off flush. The shims are ground and lapped to a tolerance of 0.0002 in.

Big end bearings are finished by means of a diamond cutter and individually fitted to the crankpin on which they are to run. The bearing bolts are pulled up to uniform tension by means of friction wrenches.

The crankshafts are still case-hardened, a practice that has been followed by Mack for many years. They are now provided with integral balance weights.

A number of additions have been made also to the powerplant equipment. An H. W. Filtrator is now included in the lubricating system, and the oil relief valve is built integral with it. The relief valve discharges over the timing gears, which latter are case-hardened steel gears that have their teeth ground to shape by a generating process developed in the Mack works. There is a separate relief valve which opens and allows the oil to by-pass the filtrator when the latter becomes clogged. A United air cleaner is also fitted and is located at the side of the aluminum crankcase with its top on a level with the top of the crankcase. A V-belt now replaces the flat leather fan belt formerly used. Some additional data on the new engines are given in the accompanying table.

60 Per Cent of European Cars Sold on Time

THE remarkable expansion which has taken place in the European automotive industry since the war can be attributed in a large degree to the growth of the instalment system of selling, according to a trade bulletin issued by the Commerce Department. More than 60 per cent of the 553,000 units sold in European markets last year, the bulletin points out, were handled on the instalment-purchase plan. This proportion compares favorably with that of the passenger cars sold in the United States during the same period, which was around 64 per cent.

The success of the instalment purchase idea is reflected in the steadily increasing exports from the United States to European countries. In 1919 American shipments of automotive vehicles to Europe were less than 26,000 units while in 1927 the figure had risen to more than 153,000 units, an increase of nearly 500 per cent.

European facilities for financing instalment sales have not yet reached the high state of development which obtains in this country. In southeastern Europe the system has been in operation only about two years while in Czechoslovakia it is also of very recent development.

About 90 per cent of the motor vehicle sales of Finland, Poland and Rumania are on the instalment plan; in Denmark the ratio is from 80 to 85 per cent; about 75 per cent of German passenger cars and practically all the trucks are sold on time, as are over half of the cars and trucks in Austria, France, Italy, and the Netherlands. In the United Kingdom, 60 per cent of the passenger cars and 50 per cent of the trucks are financed on the time basis. Spain is the only country where instalment selling has made but little headway, only 15 per cent of total sales being on that basis.

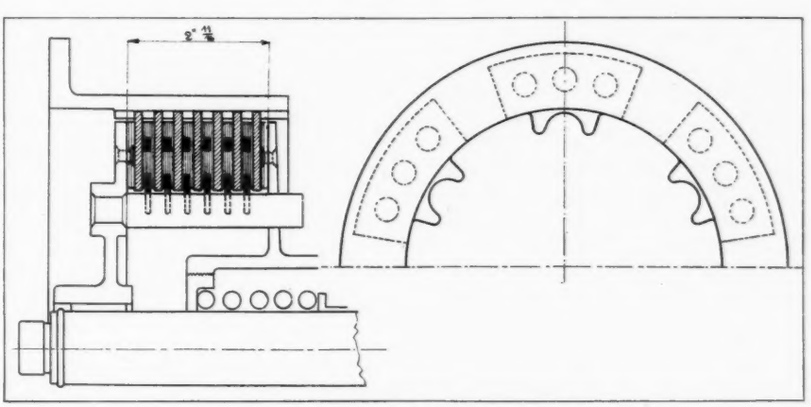
That the instalment selling system in Europe, as in the United States, is sound is indicated by the figures showing repossessions, which are estimated at not more than 1 per cent. The greatest number occur in the taxi field and the smallest in the passenger car field.

New Multiple Disk Clutch

A NEW friction clutch of the multiple disk type in which the friction material is molded directly to the steel disks instead of being riveted on has been brought out by the Desroziers Co. of Paris and is sold under the name of the JED clutch. This clutch has been adopted for the new Minerva 32-hp. model. It is claimed for the new method of construction that it reduces the thickness of the disk 40 per cent.

The driving disks are of steel of 0.120 to 0.160 in. thickness, while the driven disks have molded lining with a total thickness of 0.205 in., and a thickness for the metal part, which is considerably cut away for lightness, of 0.100 in. The total overall length is therefore the same as for the normal type clutch.

Tests are said to have shown the heat radiation of the thick external disks to be excellent and that there is no warping. The driven disks are protected from the heat by their molded asbestos facing. They are thicker and lighter than full steel disks. Another advantage claimed for this type of construction is a saving of 40 per cent in material by the use of small, independent metal elements on which the friction material is molded. While the external disks are thicker than usual, their cost is very little higher, for by reason of their greater thickness (which has an influence on weight) it is possible to make use of the cheaper grades of mild steel in place of the costly hard steels necessary for thin disks.



Details of JED multiple disk clutch

AN interesting booklet entitled "100 and 1 Ways to Make Money" has been published by the Ingersoll-Rand Co., of New York. The booklet shows how the use of portable air compressor equipment has been utilized in many ways and in nearly every type of industry to save money.

Ray Keech

What is the Ultimate Three Nations

Industry watching developments involves England and United to take a hand. New record

By Robert

WHAT is the ultimate in automobile speed? Can cars be built that will comply with the requirements of organized racing and do 225, 250 or 300 m.p.h. under official timing? And if so, will the automotive industry—those who design and build the practical utility motor vehicles for everyday use—gain anything thereby?

These are questions which have forced themselves to the fore recently as a result of the international contest for automobile speed supremacy which has been in progress for some time between British and American cars and drivers.

This contest developed so gradually and so naturally that few realized until a short time ago there was a contest. Like Topsy, it "just growed," from nothing in particular. No formal challenges have been issued and the events have all been non-competitive—single cars racing against time—but it is very much a contest just the same. It is appreciated, of course, that the whole affair is purely a sporting proposition, sponsored by independent groups in both countries, but inasmuch as it is carried on with automobiles the automotive industry cannot help but be interested.

The contest has been described as one between British and American cars. It is really more than that; it is a three-ring affair. In the main ring is the British-American tilt. In one end ring several American drivers have been competing among themselves. In the third ring two British drivers are jockeying against each other for first position.

Italy to Take a Hand

Furthermore, if present plans mature Italy will take a hand with a specially-built Fiat car piloted by Major Bernardi and powered with the 1000-hp. Model A-S 3 engine which was used in the seaplane that Bernardi drove 318.62 m.p.h. in establishing a new world's speed record for flying craft recently. It is reported that the chassis is now being built in the Fiat works, and that the car will be ready for trials at Daytona next season. That such a car, driven by a man of Bernardi's experience and skill, would give a spectacular performance is a foregone conclusion.

In order to trace the development of the contest to date it is necessary to go back to 1920. In that year Tommy Milton—who will have a car at the coming Indianapolis race—set a one-mile record of 156.04 m.

Record Brings Wakefield Trophy to U. S.

KEECH'S setting of a new world's automobile speed record brings to the United States the $5,000 gold Wakefield trophy which was donated a few months ago by Sir Charles Wakefield of England to further the development of speed cars and contests throughout the world.

The trophy was presented to the International Association of Recognized Automobile Clubs with the proviso that it was to be held by the leading automobile club of the country to which the driver making the record belongs. Up to the present it has been in the possession of the Royal Automobile Club of Great Britain by reason of the record established at Daytona last February by Capt. Malcolm Campbell. Upon its arrival in this country it will be given into the custody of the American Automobile Association.

Keech will receive an engraved replica of the trophy and also, as long as he holds the record, an income of $5,000 a year from Sir Charles, the fund for this having been established at the same time the trophy was donated. Campbell received the income up to the time his record was broken. Sir Charles reserves the right to discontinue the payments at the end of 1930.

in Automobile Speed? Seeking Answer

of international contest which States with Italy preparing is expected next year.

L. Cusick

Above — Capt. Malcolm Campbell, holder of the world's speed record which was beaten by Keech. Campbell took the record from Maj. H. O. D. Segrave (left)

p.h. at Daytona Beach. He drove a 16-cylinder, twin-engined Duesenberg Special. This was considered phenomenal speed, as indeed it was.

It should be explained here that, while Milton's mile was the fastest ever driven anywhere, it did not constitute a world's record, as American automobile records were not recognized in Europe at that time. This was due to the fact that the American Automobile Association, which certifies all racing and speed records in the United States, had no affiliation with the International Association of Recognized Automobile Clubs, which acts in a similar capacity as regards European records.

Thomas Beats Milton's Mark

Milton's time—accepted officially here and unofficially in Europe—stood until April 28, 1926, when J. G. Parry-Thomas, an English driver, made 171.4 m.p.h. at Pendine Sands, Wales. Following this, Capt. Malcolm Campbell went to Pendine Sands with a 12-cylinder Napier airplane-engined car and established a record of 174.2 m.p.h.

This is where matters stood when the battleground shifted to the United States with the arrival in New York, on March 9, 1927, of Maj. H. O. D. Segrave, another British driver, with a 24-cylinder, 1000-hp. Sunbeam Special which he was to put through the paces at Daytona Beach in an effort to better Campbell's record.

This was the first time that an European driver had come to this country in an effort to lower the world's record. Two important things influenced Major Segrave to make the trip. First was the fact that the American Automobile Association had just reached an agreement with the International Association of Recognized Automobile Clubs whereby the former was given representation on the international body and records made in America were admitted to Europe. Second was the supreme racing surface presented by the Daytona sands. It is generally acknowledged that there is nowhere in the world another course so fast as this.

After several weeks spent in tuning up his car and waiting for favorable track conditions, Major Segrave, on March 29, made the memorable run which gave him a world's record of 203.79 m.p.h.

In the meantime the all-British contest between Segrave, Campbell and Parry-Thomas had resulted in the death of the latter, who had returned to Pendine while Segrave was preparing for his trial in America, and after driving one way over the course at 179.5 m.p.h., lost control of his car and was killed.

Up to this time the United States had paid but scant attention to the records of the British drivers. Competitive track racing was an accepted institution here but none of the American drivers showed any great interest in the one-mile straightaway record.

The visit of Major Segrave, however, was evidently interpreted in several quarters as a direct challenge to America to produce a car that could equal the British performances, and during the year that followed two super-speed cars were designed and constructed here for that purpose. One of these was the White "Triplex," built by J. M. White of Philadelphia, and the other the Stutz-Blackhawk Special, built by Frank Lockhart with the support of a syndicate of backers.

About the time these cars were ready to take the track, Captain Campbell, who was out to beat Segrave's record, arrived in this country with his 900 hp. "Bluebird," mounting a 12-cylinder Napier engine. He went to Daytona last February, as also did White and Lockhart. Thus the three racers met and the contest became an international affair.

Campbell Successful

Captain Campbell accomplished what he set out to do; he took his car over the sands on Feb. 19 at an average speed of 206.95 m.p.h., topping Segrave's time by a comfortable margin.

White found that his huge 36-cylinder car was out of the contest because it had no reversing system and for that reason could not be admitted under official A.A.A. sanction.

Lockhart went on the course with his machine and was traveling at an estimated speed of 225 m.p.h. when something went wrong which caused him to lose control. The car swerved and went into the sea, with Lockhart pinned in the seat. Both driver and car were rescued. Lockhart was severely bruised and shaken up and the

car suffered damages which required time to repair.

These events put an end to the contest for the time being. Campbell returned to England with his record.

White and Lockhart both felt that they had cars which were capable of exceeding Campbell's record and both planned to continue the attempt. White worked out and applied a reversing system which met the A.A.A. requirements, while Lockhart's car was put in running condition once more. The sequel to these preparations is almost too fresh in the public mind to need recalling.

White's car, with Ray Keech at the wheel, broke Campbell's record by about 0.6 m.p.h. on April 22. Three days later Lockhart, trying to beat Keech's time, was killed and his car practically demolished.

Record Good for Year

This is the story of the contest to date. America has the speed record and is likely to hold it until the early part of next year at least, as it will be impossible to hold further trials at Daytona before next January or February on account of the condition of the sands. It is a peculiarity of this course that for nearly 10 months of the year it is too rough for 200 m.p.h. speed tests, but with the shifting of the wind and tide in January the sands begin to level out and pack down and during the most of February ideal driving conditions obtain.

After February the course begins to disintegrate slowly. It is ocasionally fit for use during March and April, but after that it is too rough. Keech made his record of 207.55 m.p.h. on April 22 and says that his speed was held down by the bumpy condition of the sands, which made it extremely difficult to keep the car steering on a straight course.

Keech fully expects that his record will be broken next February, but not before. England is known to be determined to recapture the record if that is at all possible and it would not be surprising to find Segrave or Campbell, or both, on the Daytona sands, ready for the test, next February. Both will probably have new cars. Campbell is quoted as saying after he beat Segrave's record by driving 206.95 m.p.h. last February that his Napier-engined "Bluebird" has been "all out" and that he was positive he could not get any better speed from it, except possibly by making alterations in the design.

Mr. White is already planning for the future and says that any time the record of his Triplex is broken he will be on the scene prepared for another trial. He is somewhat undecided as to what he will do with his present car, whether it will be preserved or dismantled, but in either event a new one will be built.

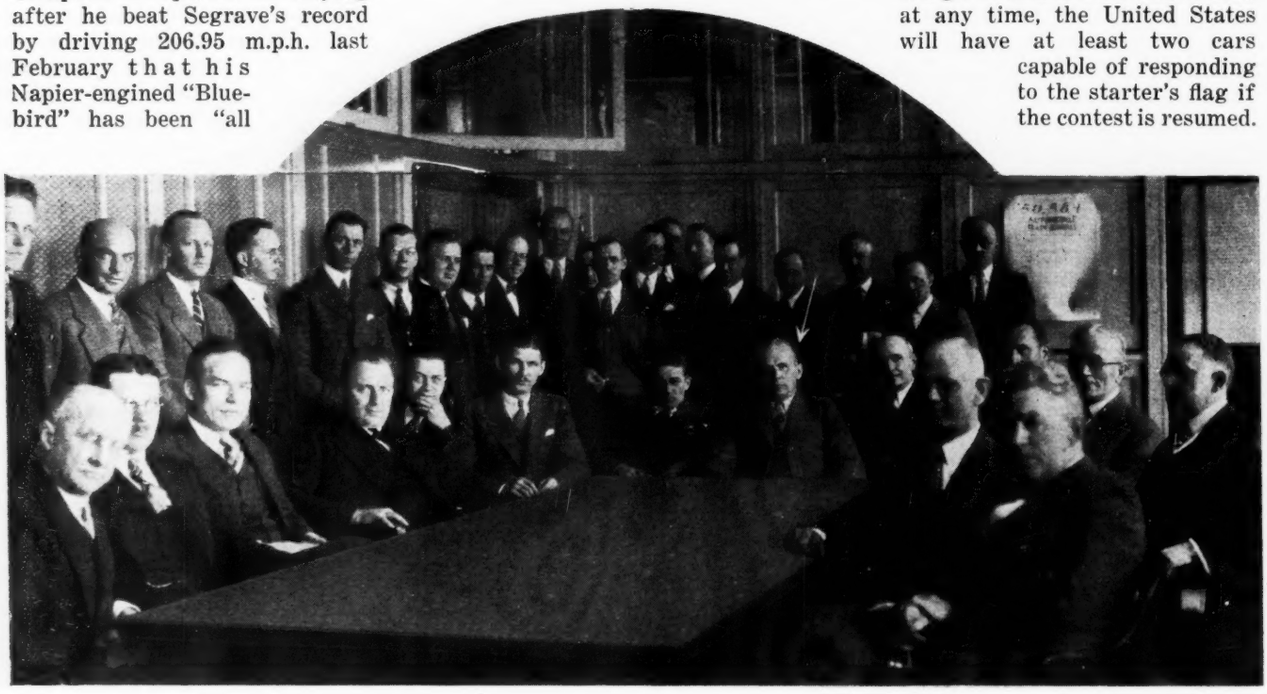
"You may be assured," he said, "that I will be ready for another trial at any time, either with the present car or a new one."

There is a possibility that the new car will be of the front wheel drive type with rear wheel steering, he said. This is a matter which he debated long and seriously while designing the Triplex and he finally decided then on rear-wheel drive because of the many mechanical difficulties involved in a three-engine—front-wheel drive hook-up and the awkward appearance that would have been imparted to the car. "I am still playing with the idea," he stated, "but can't say yet just what I will do."

Keech, in giving his impressions, of 200 m.p.h. driving to the members of the Chilton Class Journal Co. editorial staff the other day, said that when he got up around that speed, even with a car as heavy as the Triplex, —which weighs 7600 lb.—he sensed a lightening of the front end which was very disquieting and which made the steering less positive. This is a phenomenon of the driving torque. With front-wheel drive the effect of the torque on the traction would be substantially the same, but the additional weight at the front end of the car gained by placing the transmission and differential there, might help to some extent to keep the "nose" down at high speeds.

Before the question of automobile speed is settled, the car in which Lockhart was killed is likely to be seen in action again. It is understood that the plans to rebuild it are progressing and that it will again be ready to take the sands within a year.

With the Lockhart car rebuilt and a car of White's design available for another trial at any time, the United States will have at least two cars capable of responding to the starter's flag if the contest is resumed.



Ray Keech, back from Daytona, narrates his story of his record-breaking run at a conference of the Chilton Class Journal Co. editorial staff

The "Robin" three-passenger closed monoplane

Three-Passenger *"Robin"* is First *Curtiss* Commercial Plane

Will be manufactured in quantity by Curtiss-Robertson Company in new St. Louis Plant. Powered with OX-5 engine and has top speed of 99.7 m.p.h. Price to be under $4,000.

LAUNCHING for the first time into the commercial airplane field, the Curtiss Aeroplane & Motor Co., Inc., has just completed flight tests of the "Robin," a three-place, closed monoplane, powered with a Curtiss OX-5, 90 hp. engine.

This plane, which is made to sell at less than $4,000, will be manufactured in quantity by the recently organized Curtiss-Robertson Airplane Mfg. Co. in its new St. Louis factory.

The craft is a monoplane of the semi-cantilever type with wing construction of Alclad metal ribs mounted on spruce spars and covered with fabric. The fuselage, which also is fabric covered, is constructed of chrome-molybdenum steel tubing, welded in the form of a warren-truss. The landing gear is of the split type and provides a wide spread to assure safe landing and easy taxying. Tail skid is steerable to assist easy handling on the ground.

Cruising Range 580 Miles

Two fuel tanks, one in each wing, with a total capacity of 50 gallons, gives this machine a cruising range of 580 miles at full throttle and 785 miles at a cruising speed of 85 m.p.h. Top speed is 99.7 m.p.h. with a landing speed of 45 m.p.h.

The wing spread is 41 ft. and over-all length is 25.9 ft. Height is 7 ft. 9½ in. Weight when empty is 1475 lb. and useful load capacity 700 lb., making a gross weight of 2175 lb. Chord is 72 in., giving a wing area including aileron of 265.2 sq. ft. Wing loading is thus 8.2 lb. per sq. ft. and power loading is 21.7. The aerofoil section, according to the specifications, is rated at c-72 and the factor of safety is 6.5.

Other areas are as follows: Ailerons 22.3 sq. ft., horizontal tail 36.4 sq. ft., vertical tail 15.06 sq. ft., elevators 15 sq. ft. and rudder 9.7 sq. ft. The plane has a rate of climb of 480 ft. per min., a service ceiling of 12,800 ft. and an absolute ceiling of 16,500 ft.

The cabin has been designed with an idea of equaling in comfort and convenience the finest passenger automobile and ample leg room, generous seat space and deep soft cushions are provided. The pilot has unobstructed vision and large windows in the specially designed doors afford excellent side vision for passengers. The cabin is made as nearly wind, water and soundproof as possible. Upholstery is rich in appearance and door handles and window lifts are nickeled. Instruments are conveniently mounted on a panel in front of the pilot. The fuselage is colored a burnt orange with wings and tail a rich yellow and trim a lustrous black.

The Curtiss-Robertson Airplane Mfg. Co. is capitalized at half a million dollars fully paid in. It has already erected a $100,000 factory at St. Louis, directly on the flying field, for the commercial production of these planes. The building is fireproof and modern and is equipped with the latest up-to-date machinery for quantity production. It is planned to turn out three planes a day.

R. S. Damon, Curtiss engineer, will be in full charge of production at the new plant and the engineering force of the company is back of the whole project. Major William B. Robertson, former employer of Col. Charles Lindbergh on the St. Louis Air Mail route, is president of the company.

After being flight tested at Curtiss Field, the plane was flown to Washington and thence to St. Louis by Col. Charles A. Lindbergh.

MASTER specifications for dry cells and batteries have been worked out for the U. S. Government by the Bureau of Standards. These specifications are contained in Circular No. 139 of the Bureau.

Hand of "*Big Business*" Needed *in* Aircraft Development

Enormous capital is required to carry aeronautical progress into its next phase—that of mass production and low costs. Wooden construction must give way to metal.

By John F. Hardecker
Chief Draftsman, Naval Aircraft Factory

TO one who had the privilege of attending the great Aeronautical Show at Detroit recently, there comes the impression that the show was not only a great assembling of the products of a new industry from all parts of the United States and a gathering of airmen unique in our history, but of far greater import, the birth of a new era of commercial transportation.

The planes, infinite in their variety and adaptability to various useful tasks and functions, were frankly built at a price—the lowest price consistent with safety and the performance of their special function in full accordance with the development of aeronautics to date.

These were not featured as the world's fastest planes, the possible holders of new altitude records, the latest development of military features destined to strike terror into a potential enemy. No; rather, they were built to perform the carrying of a given pay load, passenger or freight, for a given flying range—at a profitable price.

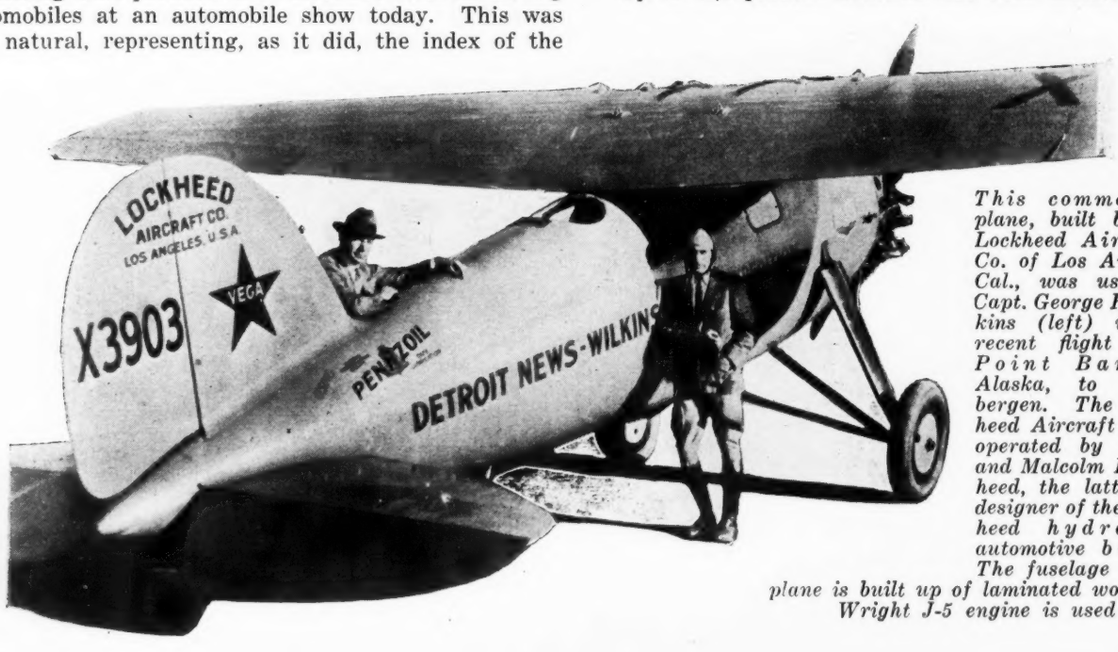
Geographical Romance

In only one possible direction did they reflect that which may be termed romantic, and that was in the geographical distribution of their sources of manufacture. There were far more plane manufacturers exhibiting their products than there are firms exhibiting automobiles at an automobile show today. This was but natural, representing, as it did, the index of the desires of progressive communities everywhere to participate with their finances and energy in this new and colossal undertaking with its infinite potentialities in the not-too-distant future. This enthusiasm extended even to those who attended the show merely as visitors, who came to look and remained to buy.

The number of planes actually sold on the floor for future delivery was a revelation of the fact that flying was here to stay—that it had arrived as an every-day factor in the life of successful industry as well as individuals.

Accepting this remarkable demonstration as a final picture of a definite chapter in aeronautical development—the beginning of the real productive phase of aeronautics—what does it reveal for the future? Will aeronautics continue to develop smoothly, quietly and progressively onward from this promising phase, or will some mighty fundamental upheaval first have to take place before the next chapter is written? Much as I should like to feel that the foundation has been firmly laid, and that it is a mere question of orderly expansion and development, I fear some mighty changes will have to take place before the next definite stage in aeronautical progress is attained.

Up to the present aviation has been definitely and



This commercial plane, built by the Lockheed Aircraft Co. of Los Angeles, Cal., was used by Capt. George H. Wilkins (left) in his recent flight from Point Barrow, Alaska, to Spitzbergen. The Lockheed Aircraft Co. is operated by Victor and Malcolm Loughheed, the latter the designer of the Lockheed hydraulic automotive brake. The fuselage of the plane is built up of laminated wood. A Wright J-5 engine is used

John F. Hardecker

THIS article expresses the personal views of the author on a subject that is probably of interest to all aeronautic men. Others, however, may hold different opinions, as the subject admittedly has controversial angles. We shall be glad to publish any comments which the article may elicit.

Mr. Hardecker was graduated from Cornell University with the degree of C.E. in 1917 and has since been associated with the Naval Aircraft Factory in executive engineering and production work, serving at present as chief draftsman. He is a member of the S.A.E. Standards Committee, Aeronautic Division, and has been acting as a Navy representative at the annual Army-Navy standards conferences.—*Editor.*

successfully in the hands of the flyers and engineers. To the success of their efforts the Detroit Show stands forth as a resplendent monument. They have labored long and worked well in offering a type of plane for practically every purpose; and I am almost tempted to add—for every purse. But, it is because of this latter factor, that, reluctant as I am to express it, the airplane industry must now definitely pass from the control of the pilot and designer into the hands of the financier, the production man and big business in general.

The big men of the aeronautical industry of the future will need to know no more of the intimate details of construction and operation than do the mighty captains of other industries know of the technical details of their respective products.

The first and foremost need of the airplane industry today is a reliable modern engine at a price. The old war surplus engines, which, up until very recently, supplied this obvious need for a cheap engine, were far from modern in their performance. Their disappearance, regrettable as it may seem at first glance, is a boon to the future of the industry. This sadly needed new engine is not a question of engineering development, merely one of production. The modern airplane engine has thoroughly established itself from an engineering and operating viewpoint, and awaits only a "Moses" to lead it out of the wilderness of development costs into the green fields of real quantity production.

That this modern airplane engine at a price will be the product of one of the pioneer builders is naturally the hope of all those identified with the industry at present. But whether or no, come it must if future development of the plane itself is not to be arrested and stinted through weakness in the very heart of the plane—the powerplant.

Heavy Investment Required

To the uninitiate, perhaps, the query naturally arises —why not increased production with increased demand in a perfectly natural development, with gradually reduced prices as a natural consequence? The recent revelation of the $25,000,000 investment in new tools and equipment required before even a single production Ford Model A was released, makes it far easier to understand.

It will take a man or group of men with tremendous financial resources and faith in the great future of aeronautics to initiate this change. It is not a question of reducing price 50 or 75 per cent, but of producing and marketing a modern aeronautical engine at one-tenth the present price. That it will pay, and pay well, is the honest belief of all those now engaged in the industry; but, they do not at present possess the tremendous resources required. To establish this engine at the price essential for the next stage of development will require the investments of financial giants, business men with gigantic faith who will be reconciled to making this investment without hope of profitable return for many years to come, until the potential demand will at last catch up with the actual investment in machine tool resources.

The next big need is for the complete revising of construction policy. No longer will each manufacturer of planes incorporate into his product all the little refinements and variations of structural details that his engineers specify—details that require painstaking manufacture with individual fit and assembly. Wooden construction, popular today because of its flexibility and adaptability in building planes in small quantities, must definitely pass away. Metal construction has been thoroughly demonstrated as a feasible engineering undertaking, and is, without equivocation, the material of quantity production.

Tooling up for metal commercial planes, even to the current maximum of aeronautical practice, while producing a better plane from a strength-

Side view of a Boling mail plane

weight ratio viewpoint, is inadequate to produce a plane which can compete with wood construction prices—in present quantities.

No single manufacturer of planes can hope for immediate financial support sufficiently large to start a production program, with its vast investment in special tools and equipment, for the construction of all-metal airplanes.

Standardization in simple hardware, such as bolts, nuts, wires and certain powerplant accessories, a work in which the aeronautical industry is far in advance of other industries at the same point of development, has been of tremendous advantage to the airplane manufacturer. He can buy these standard parts especially designed for aviation use at but little advance over similar parts adapted from another industry and but crudely applicable. So too, must this field of parts manufacture be extended. Even such integral members of construction as wing ribs, wing beams, struts, even complete control surfaces, must be standardized and manufactured by specialized concerns under modern quantity production methods. Building ribs of wood, painstakingly assembled by hand methods for the construction of wings, must be abandoned in favor of metal ribs stamped out in vast quantities by a specialized organization and automatically assembled.

The Accessory Field

So, too, in the field of accessories. Methods of attachment, to insure complete interchangeability of different manufacturers' products, have been developed to a remarkable extent. But this development must be greatly expanded beyond what appears reasonable today, and down to the minutest detail, so that every advantage may be taken of mass production methods. Every part now adapted from another industry must be redeveloped with the ever important consideration of weight as its basis. In no industry has any single factor ever assumed a more important role than that played by weight in aircraft. Every pound saved, no matter how small the individual increments that add up to make the total means an added pound of pay-load.

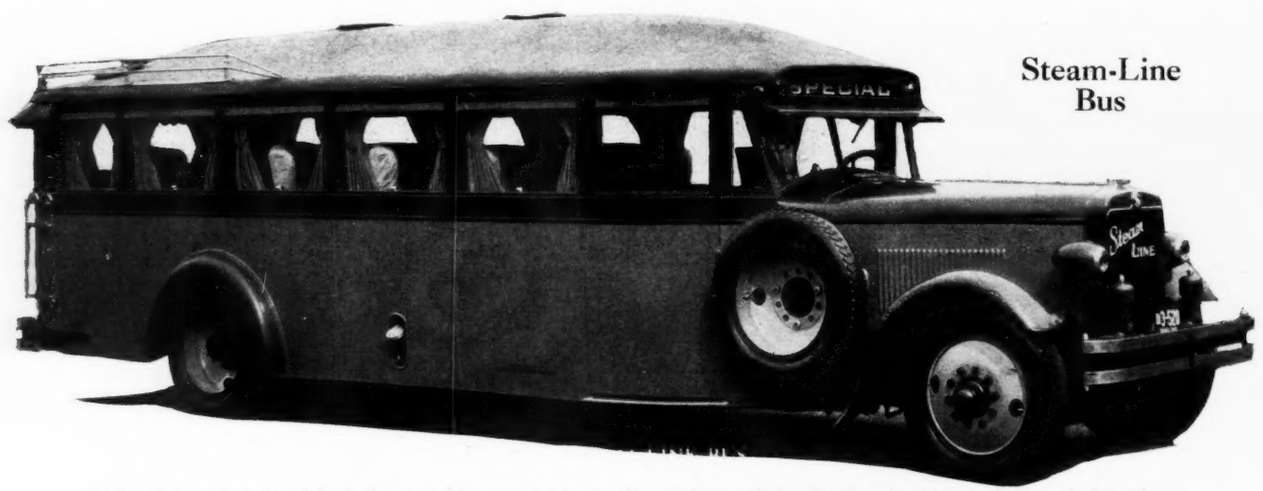
Perhaps this predicted sub-division of the industry into many small component parts will be questioned in light of the small number of large organizations existent in any successful industry today. Careful analysis will disclose, however, that these tremendous organizations have been brought about by the combination of several already successful producing companies to effect further economies in administration and sales promotion, after each of the component subsidiaries had first proved its ability as a mass production organization when operating independently.

So, despite the fact that there are relatively large producing organizations in the airplane industry today, none of these use maximum production methods in the modern sense of the word. Rather than looking for combinations of existing organizations which are not mass producing units, it is believed that mass production will come first by sub-division.

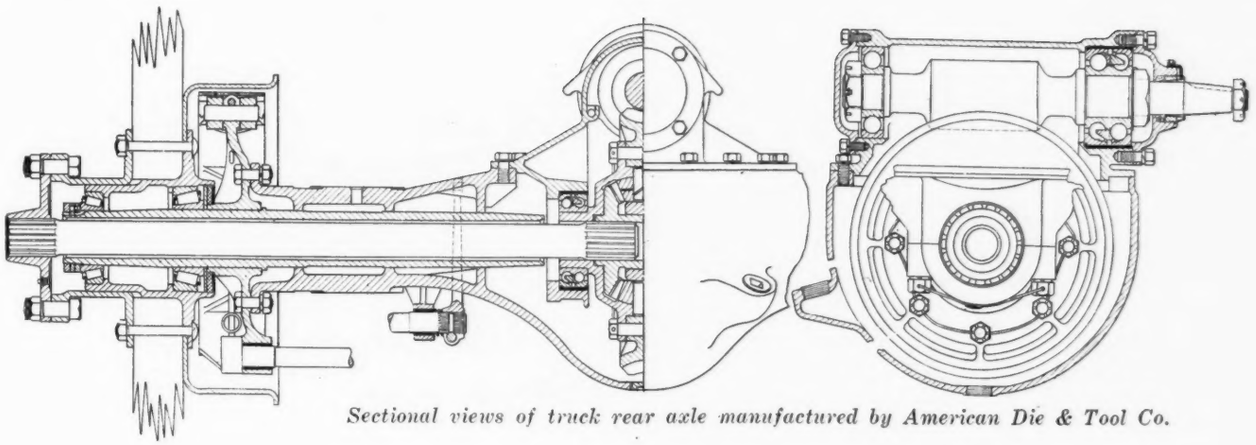
It may sound ironical to predict that the control of aeronautical development must pass from the hands of its own pioneers—the pilots and the engineers—into the hands of big business for its next phase of development. But industrial history has shown that the technical pioneers have never suffered by such a change—rather the expansion of the industry fostered by the financiers and business men has brought increased returns to the technical men.

In a commercial exhibition, such as the Detroit Show, the Army and Navy are relegated to the background. This is properly so; but due mention must be made of their contribution to not only the present phase of aeronautics, but their pioneering work for the next chapter. Lacking, as does all the industry at present, modern production methods, they nevertheless have pioneered the way for mass production. With the fundamental thought of natural emergency in the foreground, they have designed all-metal planes which have every detail (though not actually constructed at present by mass production methods) so worked out that it is directly applicable to such methods without change in design. Metal construction, to take full advantage of its value not only in terms of production possibilities, but also as an engineering material, requires detailed design differing radically in its fundamental conceptions from current wood construction. This work, in many instances too costly for a new-born industry to assume, is the contribution of the government to the airplane of the future.

Steam-Line Bus



This steam coach with de luxe parlor car body is the product of the Steam Appliance Corp. of America, Inc., Cleveland, Ohio. The company has spent several years in the development of the chassis and is now ready for commercial production. The chassis was described in AUTOMOTIVE INDUSTRIES *of Aug. 19, 1926*



Sectional views of truck rear axle manufactured by American Die & Tool Co.

Worm-Driven *Truck Axles* Produced *by* American Die & Tool

Made in two sizes for 2-ton and 5-ton vehicles and are of full-floating type with housings of cast steel. Worms are over-mounted and carried in ball bearings.

TWO sizes of worm-driven truck axles are now being manufactured by the American Die & Tool Co., Reading, Pa., which firm some time ago took over the business of the Vulcan Axle Co. of Detroit.

The two axles are adapted for use on 2-ton and 5-ton trucks respectively. They are of the full-floating type and have housings of cast steel, with inserted axle tubes of high-carbon steel. The worms are over-mounted and are carried in the differential carrier in ball bearings, a double-row bearing of the type capable of taking heavy thrust loads at the forward end, and a single row at the rear end. All thrust loads are taken on the double-row bearing and the outer race of the rear bearing is free to move endwise. There is a cap over the tunnel for the worm at the rear end, while at the forward end a stuffing box is provided to insure an oil-tight joint with the projecting shaft.

Worms Have Quadruple Threads

The worms and worm wheels are manufactured by the Cleveland Worm & Gear Co. The worms in both axles have quadruple threads. The reduction ratio is 6½ to 1 in the 2-ton axle and 7¾ to 1 in the 5-ton axle. The differential carrier, which is set into the cast-steel housing from above in the usual way, is made of malleable iron. The differential housing is made of steel castings in the 5-ton and of drop-forgings in the 2-ton axle. A four-pinion bevel differential is used in each axle, gears and pinions being made of nickel steel and case-hardened. The teeth of the differential gears are of 5-7 pitch. The worm wheels are secured between flanges on the differential housing with eight bolts whose nuts are secured by wires.

The differential is supported on both sides by double-row ball bearings. The axle housing is cast with a number of internal flanges which are bored out to afford seats for the axle tube. At its ends the housing is provided with large external flanges to which the brake spider is bolted. This spider has a hub which is bored out to make a tight fit on the axle tube, against a collar thereon. The wheel hubs are mounted on two roller bearings on the outside of the axle tube which can be adjusted by means of a nut and lock nut on the end of the tube. The axle shafts are made of chrome-nickel steel (No. 3140) and upset and cut with 10 splines at both ends. At their outer end the axle shafts connect to the hub flange through driving dogs which are splined to the shafts and bolted to the hub flange. The opening in this driving dog or clutch at the end of the driveshaft is closed by a Welch plug.

Spring pads are cast integral with the axle housing and center distances can be varied to suit requirements. Pressed steel brake drums are fitted and are secured in place by the hub bolts. These drums have an internal diameter of 18 in. and the width of the brake shoes is 3 in. Brake shoes are made of malleable iron and are cam-expanded. The brake shaft has one bearing in the spider and another one in a bracket secured to the axle housing. The end of this shaft to which the operating lever is secured is serrated, which affords a means of adjustment.

An oil filler is cast integral with the central housing, which latter is drilled at the bottom for a drain plug.

The 2-ton axle, which has a limiting capacity of 10,500 lb. on the spring pads, weighs 807 lb., while the 5-ton axle, with a load capacity limit of 15,000 lb., weighs 1164 lb.

VERLAG KLASING & CO., Berlin W-9, Germany, has published a book by Prof. Otto Wawrziniok of the Dresden Technical College containing a course on automobiles for judges, public prosecutors, higher communal and police officials and lawyers. The course is part of the extension program of the Technical College.

Tentative Draft of *Model Traffic Code* for Cities Ready

Marks completion of first step in organized effort to bring order out of present chaos. Copies now being mailed to all interested parties and criticisms are invited.

By Donald Blanchard

IN view of the mass of conflicting legislation, rules and practices with which municipalities have attempted individually to meet their traffic problems, the need of some sort of uniformity of plan and action for accelerating traffic and reducing hazards in operation has been keenly felt.

Publication of the tentative draft of a Model Municipal Traffic Ordinance by the National Conference on Street and Highway Safety, marks the completion of the first step in an organized effort to bring order out of present choas. This model ordinance is the result of an exhaustive study of existing traffic ordinances in a large number of American cities as well as of other pertinent data, and police officials, engineers, traffic judges, representatives of motor clubs, railroads, safety councils and other interests appointed by Herbert Hoover, Secretary of Commerce, assisted in drafting it.

Purely Local in Scope

The model ordinance covers purely local matters, such as the authority of local police in the direction and control of traffic, the erection of necessary signs and signals, parking regulations, special rules for the protection of pedestrians and certain driving rules peculiarly necessary on city streets. Inasmuch as it is believed that city ordinances should be mainly supplemental to State laws, the provisions of the model ordinance conform with the Uniform Vehicle Code which the National Conference prepared some time ago and which since has been quite widely followed by state legislatures.

Copies of the tentative draft of the model ordinance are now being mailed to all interested parties and criticisms of any of its features are invited by the National Conference. These may be addressed in care of the Department of Commerce, Washington, D. C. When the criticisms have been considered, any desirable revisions in the tentative draft will be made, following which the Conference will adopt the ordinance as standard. It will then be made available to municipalities as a guide for them in framing traffic legislation and in coordinating their traffic control methods with those of other towns and cities so that the motor vehicle operator will not be confronted with a different set of traffic laws and rules in each town he enters.

Judging from the reception accorded the Uniform Vehicle Code by State law-making bodies, the recommendations of the National Conference as presented in the model traffic ordinance may be expected to carry considerable weight and to be quite widely followed by municipalities. Moreover, results that have been obtained in States which have taken advantage of the Uniform Vehicle Code provide a rather secure basis for confidence in the soundness of recommendations of the National Conference.

For example, in the North Atlantic States, where the Uniform Vehicle Code has been adopted rather generally, there has been a 64 per cent increase in fatal automobile accidents since 1920, during which period registrations have increased 158 per cent. In the Middle West States where the code has not been accepted so widely, there has been a 100 per cent increase in fatalities in the same period despite the fact that registrations have gained but 126 per cent. In the South, where but few States have taken advantage of the code, registrations have increased 194 per cent since 1920 but fatal automobile accidents show a gain of 230 per cent. This is rather striking proof of the results produced by the code and inasmuch as the model ordinance originates from the body which prepared the code, it is not unreasonable to expect it to be similarly effective.

The model ordinance consists of nine articles, the first of which is a definition of terms. In the second, the authority of the police is defined and the third deals with traffic signs and signals. The ordinance provides for signal systems employing red and green, and red, green and amber lights, and in each case defines clearly just what each color means. The tremendous increase in traffic lights and the lack of uniformity in their significance has resulted in untold confusion and delay, and the adoption of these standard definitions alone will do much to simplify driving and expedite traffic.

Pedestrians' rights and duties are covered in the fourth article. While not relieving the operator of the responsibility of exercising due care, the provisions of this article tend to place the burden of proof on the jay-walking pedestrian as he has the right of way only when crossing the street on a cross-walk. Moreover, at an intersection where traffic is controlled, vehicles moving on a "Go" signal have the right-of-way over pedestrians. The next five sections deal in order with street cars and railroad trains; stopping, parking and standing; operation of vehicles; miscellaneous provisions; and penalties and procedure on arrest.

Simple Regulations Urged

In the making of regulations designed to carry out the model ordinance, the committee recommends that such regulations be as few and as simple as possible, and that they be reasonably designed to increase safety and to facilitate traffic movement. Such regulations will command respect and be to a large extent self-enforcing. On the other hand, unreasonable or unduly restrictive measures arouse resentment and invite disobedience, thus making enforcement difficult or impossible.

Important Provisions in Proposed Model Traffic Ordinance for Cities

SOME of the more important provisions in the proposed Model Municipal Traffic Ordinance are given briefly as follows:

¶ Pedestrians are given the right of way over vehicles at all crossings except where traffic at an intersection is being regulated by an officer or signals. At places other than crossings vehicles have the right of way over pedestrians although the drivers of the former must still exercise due care for the safety of the pedestrians.

¶ At intersections where traffic is controlled pedestrians must yield the right of way to vehicles proceeding under a "Go" signal while vehicles must yield to pedestrians who are crossing or have started to cross under a "Go" signal.

¶ Drivers of motor vehicles are forbidden to remain on street car tracks in front of a street car after being signalled by the latter.

¶ Parking within an intersection, on a crosswalk or between a safety zone and the adjacent curb is forbidden.

¶ Buses, taxicabs or hackneys are forbidden to park at any place other than a designated stand except for taking on or letting off passengers.

¶ No vehicle is permitted to park in such a manner that less than 10 ft. of the width of the roadway is left available for the free movement of traffic.

¶ Parking for more than 30 minutes on any street between 2. a. m. and 6 a. m. is forbidden.

¶ Vehicles overtaking another vehicle may pass either to the left or right if conditions permit. Cutting in is forbidden.

¶ The vehicle being overtaken must give way upon a signal from the vehicle from behind and must not increase its speed until completely passed.

¶ Right turns are to be made from the right hand curb while left turns are to be made from the center of the street. Unless special provisions are made, all left turns are to be made on the "Go" signal.

¶ U-turns are forbidden at intersections controlled by traffic signals or officers and in all mid-blocks.

¶ So-called "boulevard stops" are provided for all vehicles entering main streets. After the full stop is made, however, the vehicle entering the main street as well as those on the main street are subject to the usual right-of-way rules. This right-of-way rule is contained in the Uniform Vehicle Code recommended for inclusion in State law and provides that the operator of a vehicle approaching an intersection shall yield the right-of-way to a vehicle which has entered the intersection; that when two vehicles approach or enter the intersection at the same time, the operator of the vehicle on the left shall yield the right of way to the vehicle on the right, and that any vehicle traveling at an unlawful speed shall forfeit any right-of-way it might otherwise have.

Because traffic in each city is an individual problem it is recommended that the formulation of regulations be preceded by a scientific traffic survey. For this reason ordinances also have been drawn up providing for the creation of an official traffic commission and a traffic engineering department.

In view of the extent of the work done prior to the drafting of the model ordinance, in its final form, it should provide a standard which municipalities can accept and which will assure traffic regulation that will expedite vehicle movement and reduce the hazards of operation. For this reason and also because of the chaotic conditions created by the present lack of uniformity among the towns and cities of the country, the industry undoubtedly will find it advantageous to recommend its adoption in the cities in which they operate.

THE Bureau of Standards has made a series of tests on the corrodibility of non-ferrous metals and their alloys and the effects produced on the results obtained by the details of the test method employed.

Tests were carried out on a copper-nickel series containing copper, nickel and three copper-nickel alloys, all of commercial grade. The testing methods tried out were simple immersion in aerated and non-aerated solutions, repeated immersion—both continuous and intermittent—spray, and an accelerated electrolytic test. The corrosive solutions, all of normal strength, were hydrochloric and acetic acids, sodium and ammonium hydroxides, sodium chloride and potassium dichromate (used as an oxidizing agent). A few supplementary simple immersion tests were made in which nitrogen gas replaced air for agitating the solution.

The corrosion rate and the order of relative corrodibility of the five materials were found to vary very considerably for different test methods. The results clearly indicated that the essential features of the service to be met should be incorporated in any corrosion test designed to give information concerning the suitability of a metal for some particular type of service. The results of the tests are given in Technologic Paper No. 367 of the Bureau of Standards, entitled "Effect of the Testing Method on the Determination of Corrosion Resistance," by H. S. Rawdon and E. C. Groesbeck.

Weiss Universal *Joint* Redesigned *to* Facilitate Production

Transmits motion uniformly between shafts at an angle with each other. Particularly adapted for front-wheel drives. Joint consists of two claws with two or three prongs.

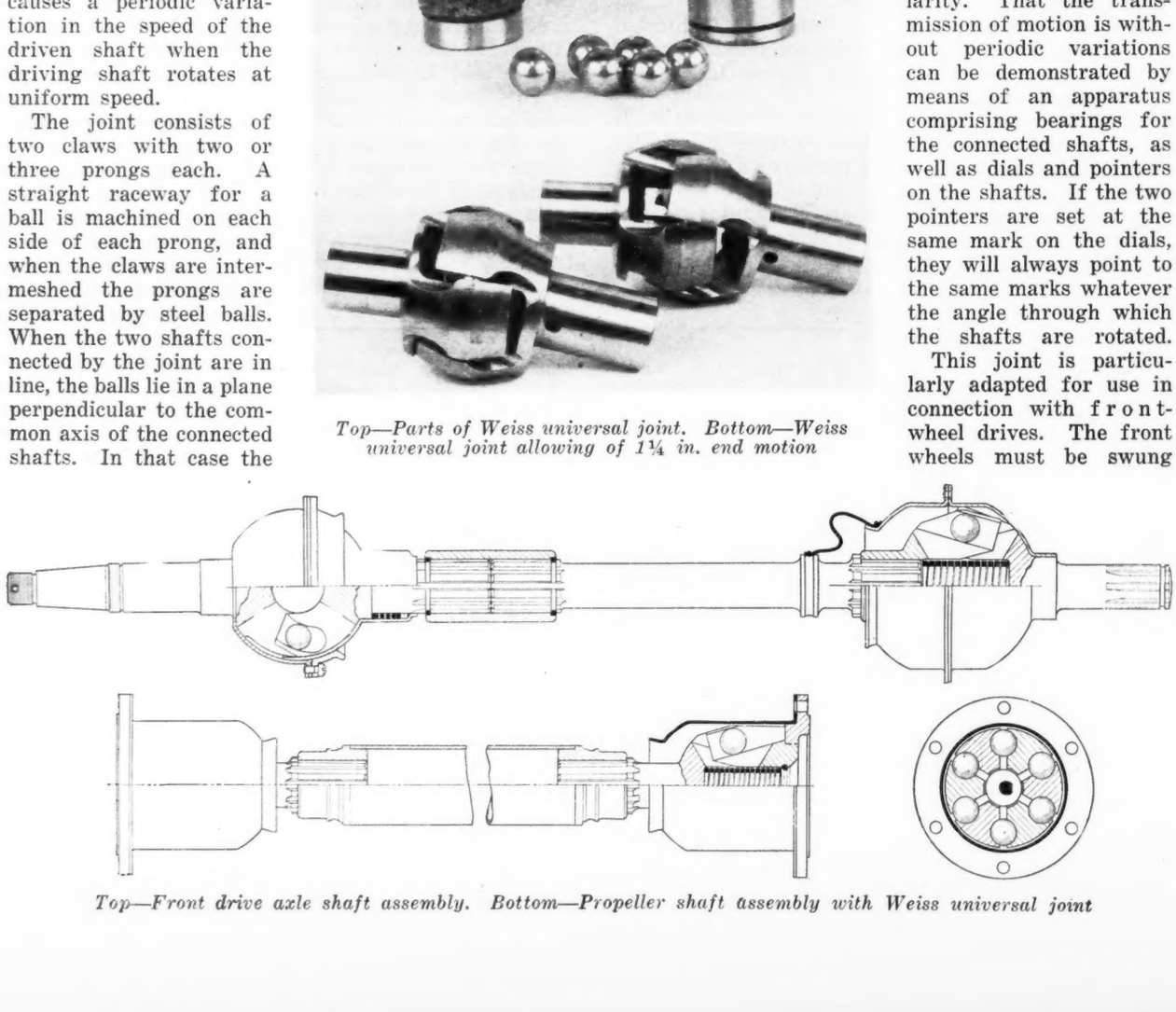
THE Weiss Engineering Corp., Grand Central Terminal Bldg., New York, has recently redesigned its universal joint to make it a better production job and to better meet the requirements of the automotive industry. This joint, as may be remembered from a brief description published in these columns some years ago, has the peculiar property that it transmits motion absolutely uniformly between shafts at an angle with each other, whereas the conventional joint with two rocking axes at right angles to each other causes a periodic variation in the speed of the driven shaft when the driving shaft rotates at uniform speed.

The joint consists of two claws with two or three prongs each. A straight raceway for a ball is machined on each side of each prong, and when the claws are intermeshed the prongs are separated by steel balls. When the two shafts connected by the joint are in line, the balls lie in a plane perpendicular to the common axis of the connected shafts. In that case the balls remain stationary in their raceways and there is no universal action.

If now one of the shafts is swung around so as to make a certain angle with the other shaft, the plane of the balls will shift through half that angle, hence the plane of the balls at all times makes equal angles with the axes of the connected shafts. Each ball travels back and forth on its raceways once during every revolution whenever the joint transmits motion at an angle, the range of motion depending upon the angularity. That the transmission of motion is without periodic variations can be demonstrated by means of an apparatus comprising bearings for the connected shafts, as well as dials and pointers on the shafts. If the two pointers are set at the same mark on the dials, they will always point to the same marks whatever the angle through which the shafts are rotated.

This joint is particularly adapted for use in connection with front-wheel drives. The front wheels must be swung

Top—Parts of Weiss universal joint. Bottom—Weiss universal joint allowing of 1¼ in. end motion



Top—Front drive axle shaft assembly. Bottom—Propeller shaft assembly with Weiss universal joint

around the knuckle pivots for steering, and if this resulted in periodic variations in the speed of the wheels it would subject the whole transmission line to severe strains and undoubtedly affect the wear of the tires. In front-wheel drives the requirements are somewhat different from those in ordinary propeller shaft drives, in which the angularity is usually quite limited. The type of joint illustrated by the photographs, in which the raceways for the balls are straight, is used for such drives, this joint having a limit of angularity of 15 deg. For front drives the joints are made with curved raceways, which enables them to operate at a maximum angularity of 30 deg. and in extreme cases, such as that of buses with front drive, in which a very large steering lock is required, two joints are built together and permit of the transmission of power at angles up to 50 deg.

Tends to Suppress Whirling

In connection with conventional propeller shaft drives the joint would seem to have particular advantages in installations where only a single universal joint is used, as there is then no means of compensating for any irregularity in speed of transmission by a second joint. However, the Weiss Engineering Corp. claims that even where two universals are used the principle of uniform transmission has its advantages in that it tends to suppress whirling.

For propeller shaft drives the joints can be made with a flange for bolting to a companion flange, as an aid in assembling and disassembling. Drawn steel housings are provided which make a tight joint with the flange at one end and are closed by a leather boot at the other. These joints will take up a certain amount of end motion by the rolling of the balls in their raceways, and under certain conditions no splined slip joint is required. Allowing for variation in distance between connected shafts by means of a rolling motion has certain obvious advantages over the use of a sliding motion, as it tends to reduce thrust loads on bearings.

The flanges with which some of the joints are provided are arc-welded onto the yokes. What has been referred to as the claws of the joints are made from drop forgings which require very little machining. Aside from finishing the bore of the hub it is necessary only to finish the raceways for the balls, and this is done either with a milling cutter or with a surface broach.

The springs in the center of the joint serve to equalize to some extent the rolling end motion, so that part of the motion is taken up by each of the two joints in the drive. The housing is a thin metal stamping and is so shaped that lubricant would be retained even though the leather boot were not used, but the latter serves to keep out dust.

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36 Cars Entered at Indianapolis

AMONG the cars officially entered for this year's 500-mile race at Indianapolis, on May 30, are two French jobs, one a Cozetti Special, to be piloted by Prince Ghica, now habitated in France after leaving Rumania, and a Bugatti, owned by an American and to be piloted by D. K. Cantlon. Two cars have been entered by the Frank Lockhart estate. One is likely to be piloted by Ray Keech, holder of the world's speed record. The other will be driven by Anthony Gullotta.

Two winners of previous 500-mile races have entered. Peter DePaolo, 1925 winner and holder of the track record of 101.13 m.p.h., will drive a "Flying Cloud Special," while George Souders, Purdue University undergraduate, will pilot an unnamed car entered by William S. White of Hollywood, Cal., who sponsored Souder's winning run last year.

Tommy Milton, only two-time winner of the contest, has built a Detroit Special, to be piloted by Cliff Durant.

A total of 36 cars have been entered. Under American Automobile Association rules the 33 making the fastest time in the qualifying trials will compete. The entries are as follows:

Driver	Car	Entered by
Benny Shoaff	Duesenberg Special	Duesenberg Brothers
Unnamed	Green Special	Green Engineering Co.
Unnamed	Stutz Special	Frank Lockhart Estate
Anthony Gullotta	Stutz Special	Frank Lockhart Estate
Cliff Durant	Detroit Special	Thomas Milton
Peter DePaolo	Flying Cloud Special	Peter DePaolo
Cliff Bergere	Unnamed	Cliff Bergere
Leon Duray	Miller Special	Leon Duray
H. Kohlert	Elgin Piston Pin Spec.	Elgin Piston Pin Co.
George Souders	Unnamed	William S. White
Unnamed	Unnamed	William S. White
Cliff Woodbury	Boyle Valve Special	Boyle Valve Co.
Fred Comer	Boyle Valve Special	Boyle Valve Co.
Billy Arnold	Boyle Valve Special	Boyle Valve Co.
Phil Shafer	Unnamed	Phil Shafer
Babe Stapp	Unnamed	Phil Shafer
Earl DeVore	Chromilite Special	Metals Protec. Corp.
Louis F. Schneider	Miller Special	Louis F. Schneider
Lou Moore	Miller Special	Charles Haase
Deacon Litz	Miller Special	Deacon Litz
Unnamed	Miller Special	Harry Miller
Unnamed	Duesenberg Special	A. S. Kirkely
Unnamed	Duesenberg Special	Henry Maley
Buddie Marr	Miller Special	William Horn
Shorty Cantlon	Buggati Special	William Horn
Herman Schurch	Sievers Junior Eight	M. R. Dodds
Sam B. Ross	Aranem Special	Thomas Mulligan and Stanley Reed
Norman Batten	Miller Special	Norman Batten
Jimmy Hill	Marion Chevr't. Spec.	Marion Chevrolet Co.
Peter Kreis	Marmon Special	Cooper Engineering Co.
Johnny Seymour	Marmon Special	Cooper Engineering Co.
Unnamed	Marmon Special	Cooper Engineering Co.

PIERCE-ARROW motor trucks now are being rated on the basis of the gross weight of the chassis, body and load, according to Hal T. Boulden, manager of the Commercial Car Division of the Pierce-Arrow Motor Car Co. Each chassis is weighed by a certified public weigher as it comes off the assembly line and the weight stamped on the caution plate. The maximum allowable weight of the vehicle including body and load also is stamped on this plate and the difference represents the combined load and body capacity of the truck. With this plan of rating obviously the weight of the body determines the amount of pay-load that can be carried without overloading.

To illustrate the working of this method of rating, the new Fleet-Arrow with dual pneumatics on the rear wheel has a vehicle gross weight rating of 9800 lb. Assume that the weight of a particular chassis coming off the line is 3928 lb. If it is to have a 1500 lb. body mounted on it and is to carry a pay-load of 4000 lb., the gross loaded weight of the vehicle will be 9428 lb. which is within the rating. In fact, the load could be increased to 4372 lb. without overloading.

This plan of rating is called the "vehicle gross weight" method. As the foregoing explanation shows, it differs from the conventional method primarily in that no arbitrary body allowance is made, but instead the actual weights of body and chassis are used in determining pay-load capacity. Probably also this method of rating will tend to attract the buyer's attention to the desirability of using bodies designed to have adequate strength without excessive weight, as each pound sliced off the body is a pound added to the pay-load capacity. Incidentally the vehicle gross weight ratings on some of the larger Pierce-Arrow models are a ton greater with pneumatics than with solids.

THE FORUM

Thinks Driver on the *Left* Should *Have* Right of Way

Argument is advanced to show that motor vehicle accidents at street and road intersections would be reduced by changing traffic rule now in effect.

Editor, AUTOMOTIVE INDUSTRIES:

I note your resume of accident facts as published by the National Safety Council and am particularly impressed with the following: "Over twice as many motorists were involved in accidents because they did not have the right of way than for any other reason." Why is that? I have been having to do with automobile accidents for many years and my conclusion is that this condition is brought about largely by the present right of way rule; that is, by giving the one approaching from the right the right of way, with the further usual proviso that the one approaching from the left does not reach the intersection first.

The Supreme Court of Massachusetts has defined the intersection to be, in effect, the whole space within the four corners. Therefore, when a collision occurs between two automobiles approaching each other at right angles each invariably contends that he was not in the wrong. The one approaching from the right relies on the primary rule above mentioned, and the one approaching from the left insists that such primary rule is nullified by his coming within the proviso of the secondary rule.

Responsibility Hard to Place

The physical situation lends considerable plausibility to the contention of the latter because, assuming that each one was traveling fairly close to his right-hand curb, as ordinarily is supposed to be, the one on the left would have to travel across considerable more than half of the intersection, as above defined, to reach the other's path; whereas the one on the right could not have much more than entered that intersection, else he would have passed the path of the one on the left. Therefore, there is not one case in a thousand where the responsibility can be clearly and easily placed. That uncertainty encourages both to take a chance, each relying upon his apparent right as above stated.

In my opinion this situation could be clarified by giving to the one approaching from the left the right of way. In that case he would have both sides of the argument; that is, first, that he had the primary right of way and, secondly, that the physical condition of the collision occurring after he had passed the greater part of the intersection showed that he approached the intersection first. Therefore, the one on the right, knowing that he will be out of luck with no argument whatever to present if a collision occurs, will not take the chance that he now takes in trying to beat the other fellow across.

The present rule having become pretty generally established, to change it would be something like changing to the metric system, or changing the calendar months, but the results to be accomplished by any of these changes might well repay for the trouble in making them.

H. H. BUFORD

Down-Draft Carburetors

Editor, AUTOMOTIVE INDUSTRIES:

Will you kindly give your version on the absence of "down-draft" carburetors in present automobiles.

The majority of cars today have L-type engines, which means that all accessories are crowded on the camshaft side of the engine, so that access to the valves through the removable plate or plates is, in most cases, a difficult task.

We all realize the importance of the carburetor, but why can't it be so constructed and located on the engine as to afford accessibility to the valves and other accessories.

How long will the engine designer impose on the service man, or, what's more, on the owner who takes care of his own car, the undesirable feature of having to remove the carburetor and with it, controls, vacuum and fuel lines, hot air pipe, air cleaners, fuel filters and what-not whenever the latter wishes to check the valve clearances?

Or does the designer believe that car engines can only be made to run with up-draft carburetors?

J. F. B.

Carburetors have always been placed in a comparatively low position at the side of the engine because that

facilitates the feed of fuel to it. All of the early cars used gravity feed from a tank in the front seat, and in order that the fuel might flow properly to the carburetor when the car was ascending a grade and the tank was nearly empty, the carburetor had to be some 6 in. lower than the bottom of the tank. With vacuum fuel feed, which replaced the gravity system on passenger cars, conditions were improved, but the fuel still had to flow to the carburetor from the vacuum tank on the dash under gravity, and the carburetor therefore had to be placed lower than the vacuum tank.

At the present time, when hoods are often a great deal higher than the height of the engine calls for, it may be possible to locate a vacuum tank directly over the engine and feed from it to a carburetor located above the level of the inlet ports. As another alternative, the vacuum tank can be combined with the carburetor, and, finally, a fuel pump can be used to pump the fuel directly from the main tank into the carburetor. In that case a down-draft carburetor can be used. In the design of the manifold provision will have to be made so that in case of faulty float action or of a leaky float valve, the gasoline will not run into the cylinders while the engine is not running.—Editor.

Diamond T Announces New Six-Cylinder Trucks

THE Diamond T Motor Car Co., Chicago, Ill., announces the addition of two six-cylinder trucks to its line. These have ratings of 1 ton and 2 tons, and are known as Model 150 and Model 302 respectively. They are equipped with Lockheed internal hydraulic four-wheel brakes. The smaller chassis is made in one length of wheelbase only, 127½ in., while the larger one is being offered in two lengths, the standard wheelbase being 167¾ in. and the special one, 176 in.

Both models are powered with seven-bearing six-cylinder engines of the L-head type. The lighter model has 3⅜ in. by 4 in. cylinder, giving a displacement of 214.7 cu. in., and develops 61 hp. at 2900 r.p.m. The engine in Model 302 has a 3¾ in. bore and a 4½ in. stroke and develops 66 hp. at 2400 r.p.m. The crankshaft in the heavier model is 2⅝ in. in diameter, which is ½ in. larger than the crankshaft diameter in the 1-ton engine. Lubrication in both engines is by force feed to main and connecting rod bearings. Feed to the Zenith carburetor is by gravity from 11 and 18-gal. tanks located under the seat. Ignition is by the Auto-Lite battery system.

Multiple Disk Clutches

Multiple disk clutches and transmissions are mounted in a unit with the engines. In the Model 150 chassis the clutch has three driving plates and the transmission three speeds. The clutch in the 2-ton model has five driving plates and the transmission four speeds with direct in high and a 5.85 to 1 reduction in low. The propeller shaft of Model 150 is tubular and carries two metal universals, while Model 302 has a self-aligning bearing carrier and three metal joints.

Semi-floating, spiral bevel gear rear axles are used in both models, the lighter model having a final drive reduction of 5⅛ to 1 and the other of 5.66 to 1. Hotchkiss drive is used, the driving thrust being taken on semi-elliptic springs of alloy steel. Model 150 front springs are 2¼ x 40 in. and have six leaves; the rear springs on the same model are 2½ x 50 in., and have 8 leaves. Model 302 is equipped with 2¼ x 40 in., 8-leaf springs in the front and 2½ x 53 in., 12-leaf spring in the rear, together with 5-leaf auxiliary rear springs. Spring eyes are bronze-bushed and pins and bolts heat-treated and ground.

The frame of the model 150 is made of 3/16 in. stock and has sections 5 in. deep and with 3-in. flanges. In the 2-ton model ¼-in. stock is used and the section is 6½ in. deep and has 3-in. flanges.

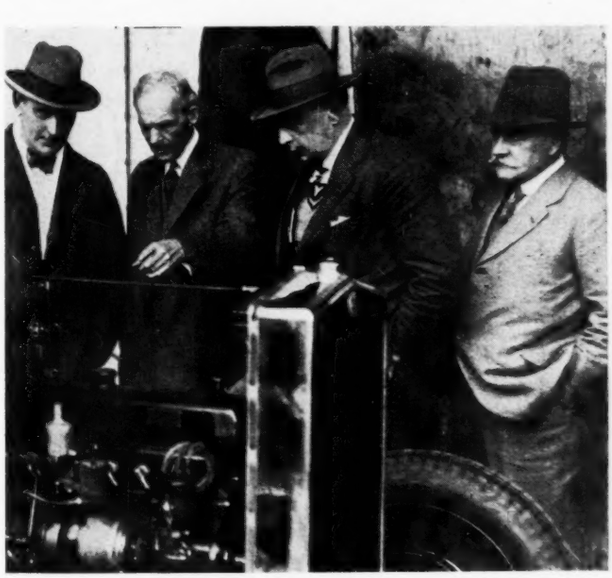
The metal spoke wheels in Model 150 are equipped with 30 by 5 in. pneumatics. Model 302 is provided with Budd steel disk wheels, unless single rear tires are specified, in which case steel-spoke wheels are used; 32 by 6 in. pneumatics are standard, duals being fitted at the rear, but an option is given at no extra cost on 32 by 6 in. front and 34 by 7 in. rear pneumatics.

Standard equipment includes a speedometer, starter, generator and battery; electric head and tail-lights, an air-cleaner, an oil gage, a temperature indicator, tools, a rim and tire carrier, etc. Model 302 also has a built-in oil filtrator.

Three standard body styles are available, which include high and low stake bodies and a packer's express. A panel delivery and a special grain and stock body are also supplied for Model 150. Except where panel bodies are specified, both models carry the standard Diamond T cab.

THE Council of the Institution of Automobile Engineers (Great Britain) has decided to award the institution medal to Capt. J. S. Wilkinson for his part in the design of the Napier Lion 875 hp. airplane engine which powered the British seaplane that won the Schneider trophy last fall. The council has also decided that in future the medal may be awarded to non-members for specially meritorious achievements in automotive engineering.

Ford Inspects Morris Six

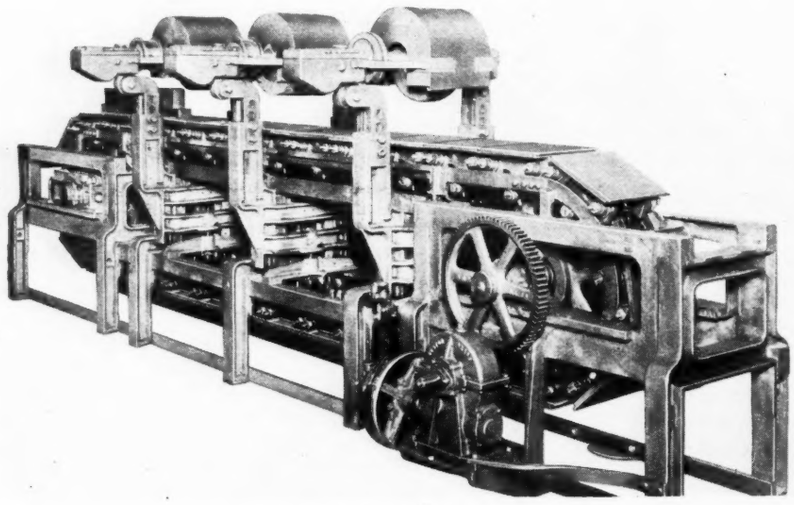


During his recent visit to England, Henry Ford made a tour of the plants of Morris Motors, Ltd., and is shown here inspecting a new six-cylinder model. With him in the picture are three Morris directors, A. A. Rowse, H. Landstad and H. W. Young

New Developments— Automotive

Automatic Polishing Machine

THE Hanson-Van Winkle-Munning Co., Matawan, N. J., has recently developed an automatic polishing machine, designated the Larson Straight Line Machine, which appears to offer very good possibilities for replacing hand operations in polishing on a wide range of metal work. The machine was designed primarily for polishing large flat surfaces such as bumper bars, molding strips, etc., but various special equipment is available so that pieces of almost any shape or size can be polished successfully. Thus, by the use of lifting cams, irregular shapes can be polished; positive rotating fixtures are provided for polishing circular pieces such as headlamps, and automatic spinning fixtures are available for use with bolt heads and similar pieces.



Larson automatic straight line polishing machine

The main feature of the new machine is the carrier table which consists of a series of cast-iron platens that interlock to form a solid table on which the work is set. These platens are machined true and are mounted on hardened and adjustable rollers, to insure perfect alignment of the top surfaces of the platens. Mechanical fixtures or magnetic chucks for holding the work are fastened to these platens.

The polishing wheels are mounted on heavy crucible steel spindles running in double bearings which in turn are mounted on heavy yokes controlled by compensating springs. The spindles are adjustable to any pressure and oscillate over the work.

This combination of balanced pressure and continuous to and fro movement is said to give the same polishing effect as is obtained by a skilled hand polisher.

The oscillating movement of the last wheel can be eliminated, if desired, to straighten the last highlight marks. The spindle yokes and wheels can be set at various angles so that each succeeding stroke will buff out marks left by the preceding wheel.

The machine is built on a sectional basis so that any number of wheels can be used. Movement of the table is controlled by foot levers at both ends of the machine. When the machine stops the wheels are automatically raised from the work and are lowered to polishing position when the machine is set in motion.

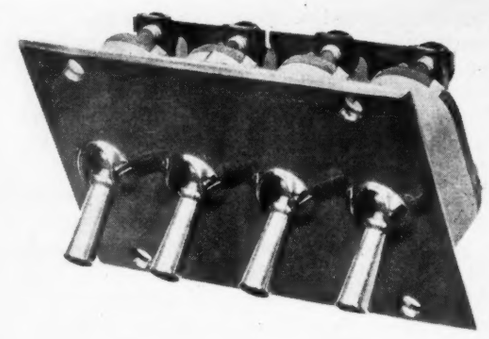
Polishing wheel spindles may be driven by motor or overhead countershaft. The platens travel at a normal speed of 12 ft. per min., but this speed is adjustable to meet particular conditions. For average polishing work each polishing head requires 3 hp. and the platen drive from 1 to 2 hp. The machine as illustrated occupies floor space of 3½ ft. by 14 ft. and weighs 4500 lb. exclusive of motor, magnetic chucks or other special attachments.

Toggle Switch

THE Cutler-Hammer Mfg. Co., Milwaukee, Wis., has announced the development of a new toggle-type automobile switch which is designed primarily to meet the severe requirements of truck and bus service. The rugged construction of this switch cuts "shorts" to a minimum and likewise eliminates such a common fault as flickering of lights, which has heretofore proved a more or less troublesome factor.

The unusual life of the contacts in the switch is a special feature. A truck manufacturer, in testing for a breakdown, found that after 791,000 operations the switch was apparently as good as ever.

The switch is obtainable in single pole or three-way units and in any "gang" or combination of these units. Three-point switches have two "on" and one "off" positions (usually for dimming). Bus bar connections across the common terminals reduce the number of connections to a minimum. All types are furnished with or without polished nickel cover plates.



New Cutler-Hammer toggle switch

Parts, Accessories and Production Tools

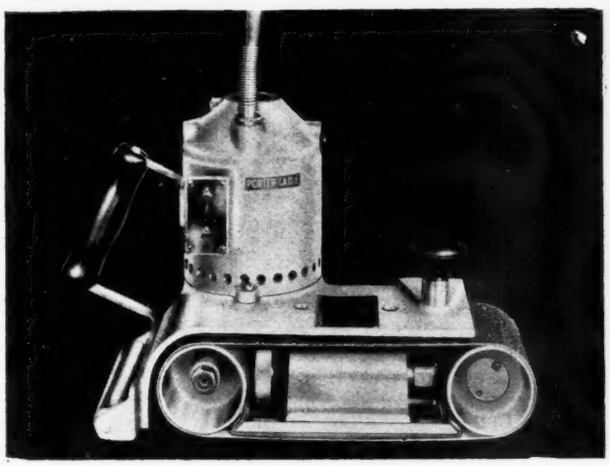
THE Alexander Milburn Co., Baltimore, has developed a combination cutting and welding torch which performs both operations with a single tip. In one position of the tip the gases are automatically passed through the preheating gas passages while the high pressure oxygen is carried through the central hole for cutting.

In the next position, made by a quarter turn of the tip, the cutting oxygen is cut off and the welding gases are conveyed through the central passage of the cutting tip, making a perfect welding flame.

Belt Surfacing Machine

A HEAVY-DUTY hand belt surfacing machine has been developed by the Porter Cable Machine Co., Syracuse, N. Y. This model, called the Super Take-about Sander, is powered with a 1 hp. universal motor which provides a speed of 2000 ft. per min. for the 4 by 27 in. belt.

Flexible pads can be furnished with which the operator can sand slightly curved surfaces and it can be used to sand right up to a wall. Standard equipment includes six belts, felt-covered shoe and 15 ft. of rubber covered conductor cable with unbreakable duplex plug.



Porter-Cable Super Take-About Sander

Rotary Table for Borers

FOR use with its new Nos. 1 and 1-A jig borers, Pratt & Whitney Co. has developed a rotary table for accurate circular indexing and locating work on jigs and drill plates which are most easily laid out by using polar dimensions.

The rotary table has a scraped surface 12 in. diameter which is provided with T-slots for clamping. The table can be quickly clamped to or removed from the regular table of the jig borer. The outer edge of the table is graduated in degrees for approximate indexing and a rapid traverse wheel rotates the table for this purpose.

This handwheel drives a hardened and ground steel worm which meshes with a worm wheel cut with great accuracy as a part of the table itself. One revolution of the handwheel rotates the table through 9 deg. For exact setting there is a slow motion handwheel which connects to the same shaft through a small worm wheel.

Pfauter Hobber

A HIGH production hobber has been developed by Hermann Pfauter, Germany, and is being sold in this country by O. Zernickow, New York. This model R.1.H., as it is designated, is designed for mass production of spur gears up to 12 in. maximum diameter, and 5 D.P. The maximum hobbing width is 8 in.

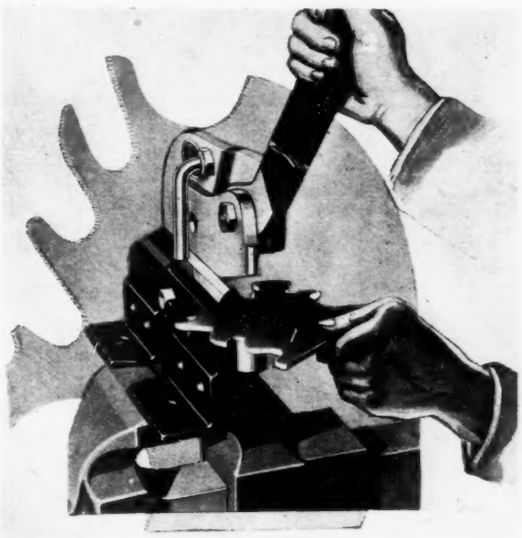
The main drive of the machine is through a direct connected motor which is bolted to a bracket on the bed of the machine. The hob drive is taken through spur and bevel gearing and a spline shaft to the hobbing saddle.

The hob speeds of 62, 89, 125 and 175 r.p.m. are attained through change gears. The hobbing head carries two shafts—a hardened and ground, axially adjustable hob spindle and the hob drive spindle. Each of these shafts is fitted with a fly-wheel to equalize the torque on the hob spindle.

Hand-Operated Nibbler

THE National Machine Tool Co., Racine, Wis., has brought out a hand-operated shear and nibbler designed for work on templates, gages, etc. The concave cutting blades of the new tool shear along any curved line and the semicircular punch cuts out hard-to-get-at corners.

The shear blades are of high grade steel and can be removed easily for sharpening. Length of the blade is 4½ in.; capacity of the shear is ⅛-in. flat stock; capacity of the rod cutter is 5/16-in. round stock.



National Machine Tool hand shear and nibbler

U. S. Exports of Cars, Trucks, Tires and Parts

COUNTRIES	PASSENGER CARS						TRUCKS						ELECTRICS		PARTS
	Up to $1,000		$1,000 to $2,000		Over $2,000		Up to 1 Ton		1 to 2½ Tons		Over 2½ Tons				
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	Value
Austria	5	$3,042	4	$5,910	2	$4,305	1	$582							$17,053
Azores and Madeira Islands	9	6,208	2	2,211			16	7,792	3	$4,339					634
Belgium	1,393	918,711	627	749,807	82	201,559	490	189,044	47	18,975	12	$11,991			96,013
Bulgaria	16	8,038			1	3,077	12	5,282	10	4,420					
Czechoslovakia	42	30,942	15	17,931	2	4,336	4	2,472							4,807
Denmark and Faroe Islands	1,417	708,549	178	168,808	7	15,206	488	206,165	71	30,435					137,552
Esthonia	1	724	1	1,078			5	3,923							1,057
Finland	254	175,710	216	241,618	12	26,766	16	15,450	67	55,200	2	4,785			35,845
France	28	24,156	79	89,455	29	70,247	26	20,970	1	1,950					75,357
Germany	597	386,403	306	357,389	85	199,559	88	14,154	13	13,106	2	4,000			975,290
Gibraltar	1	641													
Greece	109	50,293	15	19,660	8	17,380	88	49,867	19	22,982					13,086
Hungary	29	17,157	15	12,708	2	3,209			2	2,546					2,948
Iceland	5	3,504	5	7,229	1	2,560	1	921	4	2,719					2,477
Italy	184	96,970	92	113,550	17	42,698	41	30,878	13	4,987					19,739
Latvia	1	385	3	3,535			5	5,409	2	960					1,355
Lithuania	6	2,876							3	1,440					108
Malta, Gozo and Cyprus Islands	7	4,766	4	4,060					6	4,377					2,531
Netherlands	501	326,347	192	228,690	17	36,065	15	19,053	43	23,061	2	3,395			61,786
Norway	101	83,318	57	61,878	10	28,283	23	16,774	13	12,801	10	20,710			23,036
Poland and Dantzig	72	41,470	63	63,177	5	11,290	6	3,060	1	1,630					9,702
Portugal	162	94,925	57	74,365	10	24,513	113	51,389	28	25,084	1	2,177			13,927
Rumania	426	268,536	118	123,141	5	15,040	227	118,001	16	17,697					12,013
Russia	1	693							2	2,105	12	75,359			8,365
Spain	741	466,740	345	405,103	65	162,955	323	165,531	118	107,165	3	4,086			39,810
Sweden	4,883	1,872,409	371	396,200	17	38,912	473	225,184	94	92,713					134,686
Switzerland	52	38,522	168	190,129	21	44,451			2	2,484	2	1,564			8,700
Turkey															
United Kingdom	1,111	613,997	69	95,456	41	90,680	462	215,796	72	38,108					256,221
Irish Free State	93	39,779	7	7,309			1	921	16	8,763					47,433
Yugoslavia	13	6,172	9	9,335	3	5,336	18	7,650	2	2,424					4,072
United States															
British Honduras	1	400													712
Canada	4,650	2,657,622	991	1,249,415	247	578,421	169	105,397	321	509,090	45	106,962	5	3,760	5,417,856
Costa Rica	8	5,124	12	12,543	2	3,806	2	1,629	15	23,196					7,412
Guatemala	4	2,290	18	22,100	3	6,596	3	3,235	10	18,118					9,271
Honduras	4	3,613	2	2,436					8	9,822					2,293
Nicaragua	15	8,287	6	6,779	2	3,645	2	1,509	1	1,571					6,534
Panama	77	40,374	34	38,838	1	1,951	5	2,707	25	41,191	1	5,695	2	3,217	30,380
Salvador	11	8,031	30	38,202	4	8,618			3	6,862	2	7,093			8,942
Mexico	1,036	540,743	116	136,348	21	62,989	198	93,687	64	77,614	12	33,764			114,040
Miquelon															54
Newfoundland	11	6,953	9	10,569			2	702							2,798
Barbados	7	3,579	1	1,050					1	350	1	2,100			2,261
Jamaica	46	31,811	15	15,675	5	11,274	14	14,433	17	24,813					24,100
Trinidad and Tobago	10	6,391	2	2,000	1	2,050	1	790							4,256
Other British West Indies	18	8,323	5	2,279	1	500			3	3,170	1	1,100			5,801
Cuba	505	247,756	59	78,510	15	51,397	27	16,855	62	53,476	16	63,700			84,426
Dominican Republic	124	74,934	33	35,143	9	26,105	6	4,499	4	4,940					18,270
Dutch West Indies	6	3,084	18	19,110			8	6,643	1	438	2	7,890			13,224
French West Indies	21	11,132	1	1,128			6	3,434	2	960					1,089
Haiti	18	14,843	3	3,833			5	3,772	4	3,898	1	2,303			3,427
Virgin Islands	1	150					3	1,879							632
Argentine	2,906	1,603,940	613	693,311	106	294,247	686	299,727	229	274,685	37	98,123			305,612
Bolivia	4	3,060	10	12,737	2	5,123	2	2,494	3	4,959	1	4,624			4,399
Brazil	1,445	742,411	248	275,601	75	162,550	720	323,630	138	100,759	4	16,232			258,821
Chile	92	49,721	56	59,914	10	22,732	7	5,925	42	108,607	2	4,271	1	1,500	67,641
Colombia	47	31,468	98	118,293	15	34,750	46	36,755	68	106,305	7	17,780			71,021
Ecuador	7	4,990	2	2,728			3	2,292							2,321
British Guiana	6	4,550	2	1,862					2	3,298					1,048
French Guiana	1	410													190
Dutch Guiana	1	410	1	1,094											96
Paraguay	3	2,199	3	2,842			1	756	3	4,137					3,648
Peru	36	15,350	26	25,872	7	13,405	29	20,870	38	35,370	1	2,593			25,040
Uruguay	225	139,087	112	135,337	17	42,426	110	50,385	18	15,515	6	17,394			50,885
Venezuela	49	27,530	75	80,922	8	20,666	30	28,615	29	34,344	3	10,675			30,352
Aden	5	2,883	2	1,865											795
British India	303	212,392	116	115,940	4	8,306	214	169,496	57	60,921	2	2,958			156,332
Ceylon	53	34,146	24	24,601	1	1,984	43	33,606	7	8,651	3	4,869			13,127
Straits Settlements	114	61,875	14	17,950	1	2,050	6	4,644	12	16,478	5	9,264			79,158
China	48	34,075	8	12,875	4	8,846	18	14,159	58	66,168	2	3,334			36,253
Java and Madura	865	456,650	128	138,309	2	4,319	286	138,768	23	37,757					64,600
Other Dutch East Indies	81	62,546	8	10,080	2	4,805	26	17,609							11,677
French Indo-China			2	1,822											
Hejaz, Arabia and Iraq	1	410	1	1,026			14	13,532	4	3,596					3,545
Hongkong	15	9,527	4	4,780					4	3,668					973
Japan	625	367,832	126	169,421	25	61,998	27	21,413	66	74,685					1,304,806
Kwantung	4	3,520							5	6,582					2,561
Palestine and Syria	96	55,461	17	18,809	1	1,799	17	15,195	6	4,572	3	4,211			7,642
Persia	27	15,589	8	9,392			37	15,655	5	8,480					21,659
Philippine Islands	299	178,976	66	88,968	11	31,475	107	59,123	27	26,648	4	3,216			46,367
Siam	5	4,400													5,544
Turkey	103	48,960	18	19,341	5	15,062	53	23,889	5	2,743					6,667
Australia	2,802	1,307,553	640	707,365	23	49,700	541	214,190	90	112,712	2	4,503			302,906
New Zealand	916	472,397	123	134,059	6	13,188	217	97,182	15	18,798	2	4,561			57,019
British Oceania	1	300													1,218
French Oceania			3	4,040											1,966
Other Oceania															
Belgian Congo	10	5,003					25	12,789	2	3,900	3	1,628			2,765
British West Africa	30	20,454	4	4,180			22	22,930	32	48,785					59,167
British South Africa	1,036	584,018	694	733,623	19	40,338	223	120,083	82	108,300	6	20,777			138,506
British East Africa	34	23,424	20	24,390			32	28,322	16	16,353					15,905
Canary Islands	14	8,382	4	4,552			7	3,293	7	7,678					2,291
Egypt	139	78,901	30	36,383	11	23,634	172	79,158	77	32,640					94,714
Algeria and Tunis	1	677													196
Other French Africa	6	3,984	1	1,018			20	8,500							6,660
Italian Africa							2	918							
Liberia	3	2,246					4	3,022	1	1,050					1,210
Madagascar	1	396													
Morocco	14	7,493	10	9,673			27	12,050	4	1,400					7,787
Portuguese East Africa	53	36,943	8	10,238	2	5,249	5	4,918	6	8,315					4,584
Other Portuguese Africa	12	5,579					11	9,127							5,163
Spanish Africa	1	396	1	1,106											2,368
Total	31,372	$16,699,937	7,699	$8,841,989	1,110	$2,674,431	7,183	$3,552,459	2,390	$2,650,839	220	$589,687	8	$8,477	$11,050,586

for March, 1928 Canadian Exports

TIRES						PASSENGER CARS						TRUCKS		PARTS	COUNTRIES
Casings		Inners		Solids		Up to $500		$500 to $1,000		Over $1,000					
No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	Value	
															Austria
2,103	$44,366	1,077	$3,503	5	$157										Azores and Madeira Islands
50	437	32	54												Belgium
3,894	60,453	1,796	3,588	20	1,129										Bulgaria
23	221			4	147					3	$3,444				Czechoslovakia
1,372	29,345	614	1,655	80	3,496	20	$8,403								Denmark and Faroe Islands
17,092	126,674	10,572	21,491	1	71	25	10,825							$833	Esthonia
247	3,775	317	686					1	$974						Finland
704	14,700	285	779												France
2,405	41,325	594	1,736	8	375									163	Germany
18,896	259,497	10,867	24,421	12	277			2	1,604	9	12,292				Gibraltar
157	1,657	14	37												Greece
1,725	31,740	873	2,218	4	653					7	9,057				Hungary
879	21,552	888	3,431												Iceland
138	2,291	164	365												Italy
12,942	157,594	8,211	23,469	45	1,076					12	15,805			91	Latvia
67	1,184	74	161												Lithuania
9	198														Malta, Gozo and Cyprus Is.
						25	9,767	7	4,206						Netherlands
														107	Norway
5,945	79,967	4,072	7,583												Poland and Dantzig
1,349	20,271	1,428	3,307	69	2,319	73	30,662	9	8,694	5	5,578				Portugal
7,399	95,712	5,733	12,700							3	3,445				Rumania
1,241	18,015	843	2,070												Russia
4,120	47,902	3,615	4,519					3	2,982						Spain
48	630	94	201							15	16,707			213	Sweden
11,857	195,396	7,847	18,926	140	11,186									78	Switzerland
3,935	77,455	2,040	6,894							3	3,363			204	Turkey
3,279	77,066	2,920	6,679			16	7,615	2	1,948	3	3,363				United Kingdom
										3	4,136				Irish Free State
3,962	56,883	3,298	10,831	205	3,787	303	62,891	281	185,175	114	144,338			4,058	Yugoslavia
1,395	11,820	1,103	1,586											707	United States
257	3,083	82	146							3	3,444				British Honduras
						11	1,625			1	2,000			4,957	Canada
						1	400								Costa Rica
1,736	13,498	7,948	11,741	145	2,085							4	$1,432		Guatemala
952	17,274	541	1,381			4	1,789					8	2,864	23	Honduras
1,024	20,481	1,155	3,143	6	158	3	1,213	1	503	1	1,039				Nicaragua
130	2,632	143	336	4	186					1	1,166			77	Panama
158	2,033	210	491	22	1,066					2	2,331				Salvador
1,346	16,824	922	1,904	28	618	25	9,653	6	3,207	14	16,320	10	3,854		Mexico
337	6,136	485	1,084	8	552			1	533						Miquelon
15,428	169,090	8,798	19,354	467	9,405										Newfoundland
				4	198									512	Barbados
503	5,914	711	1,235											160	Jamaica
74	673	64	104	30	879	1	342	2	1,046	1	1,191			4	Trinidad and Tobago
183	2,200	88	234	86	1,988	73	27,818	24	17,437	4	4,871	14	5,011	19	Other British West Indies
26	467	8	20	2	37	8	3,456	3	2,698	2	2,261			98	Cuba
46	669	83	215	4	183	12	4,637	5	3,003					57	Dominican Republic
9,068	104,291	7,743	16,187	870	33,852					3	3,684			175	Dutch West Indies
1,313	25,596	622	1,765	7	246					8	9,768				French West Indies
307	3,743	489	987			1	370								Haiti
6	72	6	13			2	749	1	865						Virgin Islands
488	12,084	675	1,990			4	1,611			4	4,518				Argentine
6	43			1	21									432	Bolivia
10,782	143,001	10,819	17,919	416	11,662	152	58,884	28	24,546	61	74,471				Brazil
213	3,954	107	244			4	1,652	2	1,044	2	2,259			663	Chile
15,642	172,853	8,738	12,430	197	5,457	4	1,892	15	13,305	32	35,588			73	Colombia
6,436	84,431	3,707	9,192	111	4,865	50	18,812	7	3,685	13	15,682	55	21,031	342	Ecuador
3,470	67,692	3,851	10,769	168	5,950	1	460	3	1,611	10	12,340	5	1,804		British Guiana
397	5,345	203	482							5	5,802	8	2,864		French Guiana
		12	12			8	3,684	1	512						Dutch Guiana
														11	Paraguay
78	676	76	106											21	Peru
329	5,215	421	994					6	5,400	3	3,662				Uruguay
1,715	32,826	1,623	4,604	30	1,728	47	17,584					22	7,551		Venezuela
2,798	43,053	1,001	2,757	46	2,181	12	5,420	2	1,948	8	9,998				Aden
2,894	48,683	2,017	5,295	5	359	13	4,880			6	6,880	17	6,084	12	British India
						1	387					2	717	51	Ceylon
6,862	73,640	2,233	4,355	256	7,061	270	108,955	97	79,252	27	33,182	352	126,880	23,220	Straits Settlements
828	16,660	186	482	92	3,473	60	22,976	14	10,214	2	2,428	4	1,108	59	China
6,085	66,440	1,198	2,670	61	1,004	18	7,320					4	1,159	12,887	Java and Madura
1,397	17,725	976	1,843	42	802	31	12,119	6	4,216						Other Dutch East Indies
2,139	25,273	890	1,628	38	1,203										French Indo-China
295	3,460	214	420			9	3,788	10	9,403	31	38,105	2	572	14,463	Hejaz, Arabia and Iraq
262	2,801	265	585												Hongkong
398	7,026	679	1,769	20	774	1	387	1	930			43	15,187		Japan
171	1,518	160	264			11	4,353	1	518						Kwantung
6,396	65,914	4,104	7,816	675	16,414					15	16,092			4,437	Palestine and Syria
															Persia
715	10,447	577	997			26	10,097			2	2,296	6	2,148		Philippine Islands
245	5,769	324	950			4	1,545					26	9,966		Siam
7,738	88,307	4,115	11,751	211	4,180									2,431	Turkey
26	291	26	48			3	1,244								Australia
1,111	12,816	1,257	2,211												New Zealand
3,749	48,354	2,692	5,390	1,166	57,927	25	8,580	2	1,486	6	7,628	4	2,082	52,186	British Oceania
1,203	14,994	1,031	4,419	112	5,107	24	10,796	88	66,088					17,608	French Oceania
6	75	6	20							1	1,193			40	Other Oceania
41	1,152	60	135	4	110										Belgian Congo
						2	773	7	4,092			4	1,544	246	British West Africa
						9	3,411					32	11,695	420	British South Africa
529	8,876	613	1,978			22	8,180	4	3,494	2	2,625	36	12,637	1,906	British East Africa
5,444	73,689	2,160	4,484	46	2,093	31	12,050	21	15,193	8	8,747			28,952	Canary Islands
360	5,937	957	2,810			61	24,418	9	5,648			138	40,622	6,155	Egypt
407	7,586	433	1,523	23	1,236	2	880	2	1,988	3	3,551	6	2,148		Algeria and Tunis
1,469	24,744	2,437	5,206	145	6,053	18	7,054			3	4,571	50	17,897	1,218	Other French Africa
100	1,613	100	250									5	1,828		Italian Africa
86	2,203	84	241												Liberia
50	525	100	154												Madagascar
150	1,638	150	268											140	Morocco
															Portuguese East Africa
104	4,526	19	127	4	132	9	3,417	5	2,605	4	4,484				Other Portuguese Africa
111	1,625	47	92	8	198	3	1,109	4	3,557			12	4,353	243	Spanish Africa
90	1,814	176	459									2	716		
38	263														
233,980	$3,090,359	160,988	$355,369	6,153	$216,116	1,538	$550,933	683	$495,610	465	$565,705	871	$314,754	$180,842	Total

AUTOMOTIVE NEWS SECTION INDUSTRIES
Philadelphia, Pennsylvania
May 12, 1928

Excise Tax Removal Seen Stimulating Retail Sales

PHILADELPHIA, May 12—Though production in most of the automotive plants is continuing at much the same high rate as in March and April, preparations are being made in a number of plants for a gradual easing of schedules as the month progresses. The decline of about 10 per cent in April production from March was due to some extent to the shorter month, but the increase in dealer stocks was the important determining factor.

With the distinct probability that the excise tax on cars will be wiped out by Congress within a short period, manufacturers vision an improved selling period for some little time after this action and are keeping production facilities ready to meet this situation. It is practically certain that at least some volume of buying is being held up owing to the publicity of the pending excise tax action and the release of this promises important inroads in dealer stocks.

Conditions affecting the used car market are less serious at this season than usual, stocks being kept within more reasonable bounds through more conservative appraisals and better selling methods. This improvement was a feature of the April business, all sections of the country showing dealers to be in better position than at this time last year.

Borg-Warner Units Four Parts Makers

CHICAGO, May 8 — Negotiations were closed last night for a $15,000,000 merger of the Borg & Beck Co., Warner Gear Co., Marvel Carbureter Co., and the Mechanics Machine Co.

The new company will be known as the Borg-Warner Corp. It will have $5,000,000 of 7 per cent preferred stock, of which $3,500,000 will be issued, and 500,000 shares of no par common stock, of which 410,000 shares will be issued. Stockholders of the Borg & Beck Co. and the Marvel Carbureter Co. will exchange their present stock on a share for share basis for common stock of the new company. Stockholders of the Warner Gear Co. will exchange seven shares for five new shares. The Mechanics Machine Co. will be purchased outright. It is planned to pay $4 annually on the new stock.

Warner Gets French Award

NEW YORK, May 9—The annual award of the Aero Club of France of a medal for the best technical work on aeronautical engineering for 1927 has been given to Edward P. Warner, Assistant Secretary of the Navy.

G.M. Board Votes $2 Extra Dividend

NEW YORK, May 10—At a directors' meeting this afternoon General Motors Corp. declared the regular quarterly dividend of $1.25, payable June 12, and an extra dividend of $2. This extra dividend compares with one of $2 declared at this time last year.

Taken on a comparable basis, considering that one share of present stock is equivalent to a half share of stock existing in May, 1927, it will be noted that dividends paid at this time last year would amount to $4 a share on present stock as compared with $2 for this year.

G.M. Directors Reelected

WILMINGTON, DEL., May 9—At the annual meeting of General Motors Corp. stockholders held here today, directors were reelected for the ensuing year. The directors will meet tomorrow and elect officers.

F. H. Sanders is Appointed Franklin Sales Executive

SYRACUSE, May 10—Frank H. Sanders has been appointed general sales executive of Franklin Automobile Co. He was previously distributor of Franklin cars in Chicago for nine years, but retired from active participation in the industry about six years ago. He joined the Franklin organization in 1903 as a retail salesman in Grand Rapids, Mich. In 1908 he became factory representative in the Northwest. In 1909 he opened a factory branch at Rochester, N. Y., and from there moved to Cincinnati in 1911 as branch manager. In 1913 he bought the Chicago branch.

Scholz to Visit U. S. Plants

NEW YORK, May 8—Dr. Wilhelm W. Scholz, director of the German Automobile Manufacturers Association, has arrived here for a tour of the automotive centers. He will investigate association activities with particular reference to standardization, traffic control and taxation plans.

April Rim Output Rises to 2,316,324

CLEVELAND, May 9 — Rim production in April increased to 2,316,324 from 2,059,808 in April last year, and production in the first months increased to 8,354,379 from 7,374,010 in the same period last year, according to the report of the Tire & Rim Association, Inc. Rims for passenger cars in April totaled 2,074,812 and for trucks 232,085. In April, 1927 passenger rims totaled 1,885,427 and trucks 163,821.

Forecasting Markets Described by Brown

WASHINGTON, May 10—How forecasting of markets and planning of production can reduce uneconomic fluctuations in employment was described from the experience of General Motors Corp., by Donaldson Brown, vice-president, in a paper read before the manufacturing group session of the Chamber of Commerce of the United States, gathered here this week for its annual convention. Alfred Reeves, general manager, National Automobile Chamber of Commerce, announced that the Chamber was considering a plan for inviting foreign manufacturers to exhibit at the National Shows, allotting 11,000 sq. ft.

Discussion of the place of buses in modern urban transportation tended to show that street railway companies found many reasons for not embarking freely upon new bus services.

Distribution problems similar to those of the automotive industry received a good share of the attention of the delegates, and, on the manufacturing end, there was much consideration of the problems rising out of the greater efficiency of business.

Ford Back From Europe

NEW YORK, May 8—Henry Ford returned this week from England with Mrs. Ford, where he said he had enjoyed a three-weeks' automobile trip. He seemed much improved in health and expressed optimism over business conditions in England and outlook for continued prosperity in the United States.

The presidential election, he said, will have nothing to do with prosperous conditions here. He said he planned to make a trip abroad every year.

Willys Sees Quarter Highly Satisfactory

Says Company Is In Strongest Position to Meet Competition Aggressively

TOLEDO, May 9 — Willys-Overland earnings in the second quarter of the present year will be highly satisfactory, with the company now in the strongest position in its history to meet competition on an aggressive basis, according to John N. Willys, president, in his message to stockholders at the annual meeting. He said the company, now in the midst of the strongest buying demand in its history, has set new production and sales records in the last few weeks with all records being topped in the week ending May 5, when 8605 Willys-Knight and Whippet cars were built.

Stockholders reelected Mr. Willys, George M. Jones, C. O. Miniger, Gordon M. Mather, Rathbun Fuller, Thomas H. Tracy, L. A. Miller and H. C. Tillotson, all of Toledo, and C. B. Mertz, of New York, directors. Officers reelected include Mr. Willys, president; L. A. Miller, first vice-president; George M. Graham, vice-president; J. H. Perkens, vice-president and treasurer; Colin Campbell, vice-president in charge of sales, and A. B. Qualy, secretary.

"We are now reaping the benefits of our carefully projected price policies which have justified themselves," declared Mr. Willys, following the meeting. "The new Whippet Six, on which production was started only last month, has met such fine reception that capacity production is necessary to fill orders. Demand for Whippet fours has shown no cessation. Export sales of Willys-Knight and Whippet cars in the first quarter were 40 per cent higher than in any similar period."

Standard Parts Elects 10 Manufacturer Members

DETROIT, May 7—Ten new manufacturer members and seven jobber members have been added by the National Standard Parts Association. The new manufacturer members are Black & Decker Mfg. Co., Crane Packing Co., Chicago; Chadwick & Trefethen, Portsmouth, N. H.; Logangear Products Co., Manley Mfg. Co., Marquette Mfg. Co., Packard Electric Co., Pratt Chuck Mfg. Co., Raybestos Co., and Ray Day Pistons, Inc.

The following manufacturers have resigned: Automotive Gear Works, Inc., Gill Mfg. Co., Milwaukee Bearings Co., Motor Rim Manufacturers Co., Schlieder Mfg. Co., and Ver Wys & Co.

Sylvain de Jong

PARIS, April 30 (*by mail*)—Sylvain de Jong, president of the Minerva Automobile Co., Antwerp, Belgium, died in that town yesterday, at the age of 52, after two years' illness. De Jong founded the Minerva Company in 1897, for the construction of bicycles. Motorcycles followed, and automobiles were first produced about 1900. In 1908 Minerva adopted the Knight motor and for the last 20 years has produced no other type. Its factory, occupied by the enemy during the whole of the war, Minerva got into production again in 1919, and at the present time employs more than 4000 hands. Two other brothers, Henri and Jacques de Jong, are still associated in the business.

Auto-Lite to Absorb USL Battery Corp.

TOLEDO, May 9—Preliminary steps to the merger of the USL Battery Corp. with Electric Auto-Lite Co., have been completed and approval of the plan is assured by stockholders of both companies, it was announced here today by C. O. Miniger, president of both industries.

The Electric Auto-Lite Co. will increase its capital from 250,000 shares of no par common stock now outstanding to 1,000,000 shares authorized and also $10,000,000 authorized 7 per cent cumulative preferred stock. Present stockholders of the Auto-Lite company will receive 2.6 shares of the new common for each share they now hold.

The holders of the 160,000 shares of no par common stock of the USL Battery Corp. will receive 1.5 shares for each share they now hold. Holders of the $800,000 of 10 per cent preferred Class A stock will receive $150 par value of the new Auto-Lite preferred for each $100 par unit of present holdings and the owners of the $3,000,000 of Class B preferred will receive an even exchange in the new Auto-Lite preferred.

Thus under the new arrangements Electric Auto-Lite Co. will have outstanding 890,000 shares of common and $4,200,000 of its preferred stock. Total assets of the two companies at the close of last year were $16,321,691, according to statements issued.

Mr. Miniger explained that the step was in line with the purchase of the starting and lighting business of the American-Bosch Magneto Corp. a year ago. Large holdings of the stock of USL Battery have been acquired by Mr. Miniger and associates, and the amalgamation is considered an entirely logical and natural step.

G.M. to Build Research Unit

DETROIT, May 10—General Motors Corp. will erect an 11-story research building here adjacent to the General Motors Building to which it will be connected by a tunnel. When completed the present research building at the rear of the main General Motors Building will be used for company offices. The new building will contain about 500,000 sq. ft. of floor space. The present research building has become inadequate since it was occupied by the research division three years ago.

Business in Brief

Written exclusively for* AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co.

NEW YORK, May 10—Retail trade in many parts of the country during the past week has been stimulated by the advent of more seasonable weather, although the reports so far available for April reflect no improvement. This is partly because there was one less business day last month than in April, 1927. Sales of 15 chain-store systems were only 7.40 per cent larger than in the corresponding month a year ago, while the total for the four months of the year to date is 15.1 per cent above that of last year

A similar trend is evident in sales of two leading mail-order houses, which were 1.3 per cent smaller last month than in April last year, as against a gain of 3.7 per cent for the four months.

FREIGHT CAR LOADINGS

Railway freight movement shows some improvement. Car loadings in the week ended April 21 numbered 944,694, which is 32,317 more than in the preceding week and 5891 less than in the corresponding period last year.

BANK DEBITS

Check payments continue in larger volume than a year ago, the increase for the week ended May 2 in bank debits to individual accounts outside of New York City amounting to 10 per cent. For the year to date the total is 7 per cent above the comparable figure for 1927.

The speculative movement in stocks continues unabated, prices having moved upward steadily last week. Brokers' borrowings, according to both the Stock Exchange and the Federal Reserve compilations, stand at the highest point in history. Loans to brokers and dealers secured by stocks and bonds made by reporting member banks of the Federal Reserve system in New York City increased $138,000,000 during the week ended May 2, reaching a new peak of $4,282,000,000.

FEDERAL RESERVE REPORT

The use of reserve credit continued to increase during this period. Although the Federal Reserve banks decreased their holdings of government securities by $13,000,000, this was more than offset by an advance of $48,000,000 in discounts. The reserve ratio declined from 71.3 to 70.2 per cent.

CROP CONDITIONS

The appearance of better weather with more encouraging crop reports, has been followed by sharp declines in prices of grains and cotton. A favorable feature of the agricultural situation is the marked recovery in hog prices in recent weeks.

FISHER'S INDEX

Commodity prices in general continue to show great strength. Professor Fisher's index reached a new peak for the year last week at 99.8, which compares with 99.7 a week earlier and 97.6 four weeks earlier.

Truck Merger Joins Sterling and Corbitt

New Company Will Maintain Both Plants and Have Assets of $4,000,000

HENDERSON, N. C., May 6—Merger of the Corbitt Truck Co., $500,000 motor truck manufacturing company of Henderson, with the Sterling Motor Truck Co., Milwaukee, was approved by stockholders of the Corbitt company meeting here Saturday. The merger was approved by the Corbitt directors a week ago, at which time favorable action was recommended to the stockholders by that board. Both the directors and stockholders of the Milwaukee concern have approved the consolidation, which now becomes a reality.

The Sterling company is capitalized at around $3,000,000 and the Corbitt company at around $500,000. Under the terms of the merger, shareholders in both companies will receive share for share of stock in the new corporation, it is understood. The combined companies will have assets in excess of $4,000,000 and a surplus of $800,000, and owe nothing, it is said.

Combined annual sales of the two companies are estimated at around $6,000,000 with profits estimated at between $400,000 and $500,000. Corbitt shareholders are to receive a certain amount of 8 per cent preferred stock and a certain amount of common stock, the preferred to pay 8 per cent, and common 6 per cent.

It is the announced purpose of the Sterling company to place orders with the Corbitt company that will enable the Henderson plant to double its output, and will mean an increase of the present force at the Corbitt factories here from about 50 to 75 or 150 mechanics, it is said, with an additional employment made necessary in both the truck department and the woodworking section, where the bodies, cabs and other equipment are made.

Marquette Buys Products

ST. PAUL, May 7—Marquette Mfg. Co., Inc., has acquired the exclusive manufacturing and sales rights of the Pacific rim tools and Kennedy tire iron, also the exclusive use of the trade mark. All shipments will be made from Cleveland as heretofore. The products will continue to be marketed through regular jobbing channels.

G.M. Employing 202,653

NEW YORK, May 5—New employment records were established by General Motors during March, the roll being 202,653 employees on March 31 this year. The previous record, which was established in February, was 201,373. The March figure compares with 184,766 for March last year and with 192,112, the 1927 high reached in April.

New Policy Lowers Cost of Insurance

NEW YORK, May 5—Insurance of automobiles against fire, theft, tornado and other hazards for actual value rather than for a specific amount is introduced in a new form of policy brought out by the Fidelity-Phenix Fire Insurance Co. According to the company's bulletin, the new form affords the motorist a saving in the cost of his car insurance because it makes possible a premium computed on an average value prevailing during the term of the policy instead of on the basis of original cost. Each year there is a natural progressive decline in value, up to the fifth year, after which most cars are uninsurable.

Ruggles Heads Company to Build Truck Assembly

DETROIT, May 5—The Dual Duty Co. has been organized at Alma, Mich., to manufacture a new rear end assembly for converting Ford and Chevrolet trucks into six-wheel vehicles. Officers of the company are Frank W. Ruggles, former president of Republic Truck and Ruggles Truck, president; H. E. Chatterton, Lansing, vice-president; A. H. Madsen, Lansing, treasurer, and Harley Williams, Alma, treasurer. The company will manufacture its product in the plant built several years ago for the Bolstrum truck, situated between Alma and St. Louis.

The unit lengthens the wheelbase of the truck to which is applied about 42 in. The extra wheels are mounted in the rear of the regular driving wheels and are not driven. In the mounting for the Ford truck the extra axle supports the rear end of a spring which is attached to the frame by a pivot and the front of the spring is attached to the regular rear axle. Radius rods connect a bracket at the center of the spring and the extra rear axle. On the Chevrolet a cantilever type spring is employed with radius rods running from drive axle to extra axle.

Fageol Gets 70 Order

OAKLAND, CAL., May 5—The largest truck order ever placed on the Pacific coast has just been booked by Fageol Motors Co. from Shell Oil Co. This order is for 70 trucks, delivery to be made as rapidly as they can be built. The Drayage Service Corp., also of Oakland, operators of more than 50 Fageol demi-trucks and trailers, has ordered seven more to apply against a contract for 50. Fageol officials report 1928 as the most prosperous year since the corporation was formed.

Used Car Dumping in Canada Protested

Dealers Ask Change in Customs to Curb Competition From U. S.

OTTAWA, May 5—The Manitoba Motor Trades Association, Winnipeg, has placed a resolution before Hon. W. D. Euler, Federal Minister of National Revenue, protesting against the alleged "dumping" of used cars from the United States into Canada and asking that the "anti-dumping" clause of the Canadian Customs regulations be applied to the importations of second-hand automobiles into the Dominion from the United States on the ground that such imports create unfair competition for Canadian automobile dealers.

The Manitoba dealers declare that they have the support of the automobile trade in Alberta and British Columbia in their protest and that they have sought the cooperation of the dealers in Ontario, Quebec and other parts of Canada.

The resolution asked for a new form of customs appraisal on second-hand automobiles brought into Canada from the United States, claiming that such automobiles were being bought at junk prices, after which they were being shipped to Canada where they were being sold at figures which the Canadian dealers could not meet without suffering considerable loss. The association declared that such a situation should not be allowed to continue and, accordingly, the request was made for a "dumping" duty on the second-hand cars. A new customs appraisal form should be adopted, it was urged, so that the Canadian duty on used cars would be based on their fair market value in Canada. This would reduce the unfair competition for dealers established in the Dominion.

It was held by the Manitoba Motor Trades Association that, for some time past, large numbers of second-hand cars had been dumped into Canada from the United States at prices that were considered excessively low.

McClaren at Capacity

CHARLOTTE, N. C., May 5—Sales of tires by the McClaren Rubber Co. went well above all former corresponding totals in the first quarter of this year, according to Charles Collins, general manager. April business was good, he said, and prospects for May are satisfactory. Production is being increased somewhat and the plant now is operating close to its maximum capacity.

Overseas Club Moves

NEW YORK, May 5—Overseas Automotive Club, Inc., has moved its headquarters from 225 West Thirty-fourth St. to 460 West Thirty-fourth St.

Wholesale Outlets for Parts Increase

M. & A. M. A. Shows 50% Gain in Distribution Facilities in 18 Months

NEW YORK, May 10—Expansion of wholesale outlets on the part of service parts manufacturers during the past 18 months is shown in a survey just completed by the Motor & Accessory Manufacturers Association. Distribution facilities of typical manufacturers have increased 40 to 50 per cent during the period surveyed.

Improved availability of merchandise has been the aim and the result of this expansion. While increase in the number of repair establishments has had a certain influence, the gain in wholesale representation of the average manufacturer has been far greater than the expansion of retail service stations.

According to a survey made in September, 1926, 221 cities were listed as wholesale points by a sufficiently large number of manufacturers to justify their being called first line distribution points. This second survey shows 399 cities in this classification, with secondary distribution points increased from 310 to 520 and third line cities increased from 563 to 953.

The average number of jobbers and parts manufacturers reported in 1926 was 231 while in the last report the number is 388.

David Gray

DETROIT, May 9—David Gray died Wednesday at Santa Barbara, Cal., of pneumonia. Mr. Gray, with two brothers and a sister, inherited the $20,000,000 fortune left by his father, John S. Gray, which resulted largely from the investment of $10,000 in Ford Motor Co. in 1904. David Gray, while a stockholder, served as a director of the Ford company and later was interested in Gray Motor Co.

Makes Duco for Airplanes

NEW YORK, May 8—E. I. du Pont de Nemours & Co. has produced a special Duco for airplane use, formulated to be sprayed on the doped fabric surface. A series of new colors has been developed for this purpose, aimed to provide the greatest visibility and, therefore, safety.

Ford Speeds Sedan Output

DETROIT, May 7—Ford Motor Company has entered production of its four-door sedan model. Production is understood to have been delayed due to lack of necessary body dies but the company now reports they are being shipped to dealers in limited numbers. It was indicated that four-door sedan production will be gradually stepped up along with the increased output of other models.

Germany is Bidding for European Market

NEW YORK, May 5—German automobiles were predominant at the exhibition of commercial automobiles and special cars held in connection with the Leipzig Trade Fair which has just closed. More than 300 exhibits were displayed. Germany, according to the management of the fair, is making a definite bid for European business in automobiles and, despite announcement of a 25 per cent reduction in tariff, the German industry seems to feel confident that it can satisfy a large portion of the steadily growing demand for its own and other European interests.

MurGray Muffler Offered by Murray

DETROIT, May 5—Introduction to the trade of MurGray mufflers by the J. W. Murray Mfg. Co., a division of the Murray Corp. of America, was announced this week. According to B. M. Pheatt, sales manager of the J. W. Murray Mfg. Co., the mufflers will be made available to manufacturers as standard equipment and also through jobbers as replacement units for various makes of automobiles.

Edward H. Radecky, well known in automotive circles, has joined J. W. Murray division as assistant sales manager and will be in charge of developing muffler sales under Mr. Pheatt's department. Emmett P. Gray, a pioneer in the industry and well known as president of the Gray-Hawley Co., has joined Murray in a consulting capacity. The MurGray mufflers are being made under patents controlled by Mr. Gray and which have been licensed to the Murray corporation.

It is also stated that an airplane muffler is being developed.

Equips 28 Gas-Electric Buses

NEW YORK, May 5—General Electric Co. is furnishing the electrical units for 28 gasoline electric buses for the Boston Elevated Railway Co. Ten of these buses are to be manufactured by the Twin Coach Co., Kent, Ohio; 11 by the American Car & Foundry Motors Co. of New York, and seven by the Vesare Corp., Albany, N. Y.

Steel Institute Meeting May 25

NEW YORK, May 5—The American Iron & Steel Institute will hold its twenty-third general meeting at the Hotel Commodore, New York, May 25. Papers dealing with technical subjects will be read in the morning and afternoon sessions.

Carolina Trade Sees Plain Car Returning

Says Buyers Against Cost of Trimmings—Used Car Stocks Increase

CHARLOTTE, N. C., May 5—The used car is in the saddle in the Carolina territory and is riding a hard race with new cars in the number of units sold, according to information obtained by a survey conducted among distributors and dealers.

Unfavorable weather prevented the development of spring used car demand in full force up to May 1. Retailers have paid a rather dear price for the volume of new car business because of the used car situation. More than $2,000,000 of capital is tied up in used cars in Carolina dealers' stocks, and of that total approximately $175,000 worth of used cars are owned by dealers here.

Motorists in this territory apparently are losing their interest in flashy cars. The major demand now is for "conservative" closed models. Maximum comfort and service for a minimum of money is the buyer's aim, it appears, according to dealers and distributors' reports, and a desire generally is expressed that the unnecessary cost of so-called trimmings be eliminated. Among the trade the opinion appears to be gaining that public preference soon will have reverted to where it was a few years ago, when the wave of gaily finished cars spread over the country.

The public interest in this territory in fast cars probably is slowly increasing, as might be expected with the steady development of the system of paved roads which are being constructed with the view of providing safe driving at speeds up to 60 miles per hour on the curves.

17 Balloon Tire Sizes Approved as Standard

NEW YORK, May 9—The proposed standard list of 17 balloon tire sizes approved by the directors of the National Automobile Chamber of Commerce, the Rubber Association of America, Inc., and the Tire & Rim Association of America, Inc., follows:

New Marking	Present Marking	Rim Section Width	Maximum Tire Width On Rim
4.50-21	30 x 4.50	2.75 in.	4.75 in.
4.75-19	28 x 4.75	4 in.	4.85 in.
4.75-20	29 x 4.75	4 in.	4.85 in.
5.00-19	29 x 5.00	4 in.	5.15 in.
5.00-20	30 x 5.00	4 in.	5.15 in.
5.25-18	28 x 5.25	4 in.	5.35 in.
5.25-19	29 x 5.25	4 in.	5.35 in.
5.50-19	29 x 5.50	4 in.	5.60 in.
5.50-20	30 x 5.50	4 in.	5.60 in.
6.00-18	30 x 6.00	4½ in.	5.95 in.
6.00-19	31 x 6.00	4½ in.	5.95 in.
6.00-20	32 x 6.00	4½ in.	5.95 in.
6.50-18	30 x 6.20	4½ in.	6.40 in.
6.50-19	31 x 6.20	4½ in.	6.40 in.
6.50-20	32 x 6.20	4½ in.	6.40 in.
7.00-18	30 x 6.75	5 in.	6.90 in.
7.00-20	32 x 6.75	5 in.	6.90 in.

Men of the Industry and What They Are Doing

Ford and Lawrance Get Franklin Institute Awards

Henry Ford and Charles L. Lawrance are among the group of 15 men prominent in invention and scientific discovery who will receive medals from Franklin Institute, Philadelphia, at its annual medal meeting May 16. Mr. Ford will receive the Elliott Cresson Medal in recognition of his development of high speed production. Mr. Lawrance will receive a similar award for his development of the Wright engine.

Charles F. Brush will receive the institute's highest award, the Franklin Medal, as the inventor of the first practical electric storage battery. Among others to be honored is Dr. Vannevar Bush, professor of electrical power transmission at the Massachusetts Institute of Technology.

Burr on M. & A. M. A. Board

C. H. Burr, treasurer of the SKF Industries, Inc., has been appointed to the board of directors of the Motor & Accessory Manufacturers Association, and is also made secretary and assistant treasurer, filling the vacancy caused by the resignation of A. H. D. Altree, vice-president of the American Bosch Magneto Corp. Mr. Altree resigned on account of pressure of other activities but retains committee memberships.

Tobias Now Vice-President

J. J. Tobias has been elected vice-president of the Moto Meter Co., Inc. He has been connected with the company for 12 years as equipment sales manager in Detroit. George Feher has been appointed advertising and sales promotion manager, succeeding A. S. Otton, who has been transferred to the spark plug sales division.

Moskovics Lockhart Administrator

F. E. Moskovics, president of Stutz Motor Car Co. of America, Inc., has been appointed administrator of the estate of Frank Lockhart, race driver, who was killed April 25 during a speed trial at Daytona, Fla. The estate is said to consist of some $10,000 in personal property.

F. J. Fisher on M. C. Board

Frederick J. Fisher, vice-president of General Motors Corp., has been elected a member of the board of directors of the Michigan Central Railroad, to fill the vacancy caused by the death of Chauncey M. Depew.

Thien Back from S. A. Trip

Robert R. Thien, advertising manager of General Motors Export Co., has returned to New York after a trip visiting the South American operations.

Junkers Noncommittal on Plane Plant Here

Professor Hugo Junkers, German airplane manufacturer and designer, has arrived in the United States on the North German Lloyd liner Columbus. Professor Junkers' visit is primarily to see his son and daughter but he did discuss in a noncommittal way the possibilities of the manufacture of Junkers planes in this country.

Blythe Aids Litchfield

Harry E. Blythe, superintendent of the Goodyear California plant at Los Angeles, has been appointed assistant to P. W. Litchfield, president of Goodyear Tire & Rubber Co. He will be in charge of personnel and special sales problems. He will be succeeded as general superintendent at Los Angeles by E. J. Thomas, formerly assistant to the president and manager of personnel at Akron.

Roosen Joins Sterling

H. O. Roosen has been appointed sales manager for Sterling Motor Truck Co. in the southern California territory. He will have headquarters in Los Angeles. Until recently, Mr. Roosen was vice-president and general manager of the Federal Motor Truck Co. of New York.

Mulch With Chrysler of Canada

R. H. Mulch has been appointed sales manager of the Chrysler Corp. of Canada, Ltd. Coincident with Mr. Mulch's appointment is the news that B. J. Mothersill has been named director of advertising, and J. H. Hickey, service manager.

Citroen Addresses Club

Andre Citroen addressed the American Club in Paris upon the influence of American methods of mass production upon the French automotive industry. He said there would be 3,000,000 cars in use in France within a few years as compared with 1,000,000 now.

Munch Joins Rollway

Alfred E. Munch has been appointed representative of the Rollway Bearing Co., Inc., in the Chicago-Milwaukee district and with headquarters in the Railway Exchange Building.

Williams Goes to Los Angeles

C. S. Williams, manager of the St. Louis factory branch of Ford Motor Co. since 1920, departed for Los Angeles last week to take charge of the new Ford plant there.

New De Soto Corporation Names Field Organization

District managers of the De Soto Motor Corp. have been selected by C. W. Matheson, vice-president in charge of sales, and the men are now functioning in their respective territories. The managers and their territories are as follows:

G. V. H. Cairns, New York; F. M. Hunt, Philadelphia; C. E. Thompson, Boston; A. C. Maucher, Pittsburgh; J. G. Shelley, Buffalo; F. C. Van Derhoof, Albany; John R. Berry, Cleveland; Willard Karl, Washington; C. B. Gaunt, Detroit; W. M. Hogle, Chicago; G. H. Cox, Kansas City; A. L. McMeans, San Francisco; T. E. McMeans, Portland; F. C. Clough, Denver; W. B. Gleeson, Minneapolis; E. F. Boissevain, Fargo; E. V. Jolliffe, Oklahoma City; C. A. Loomis, Omaha; Lee Francis, Dallas; John H. Gordon, Atlanta; J. E. Rossell, Charlotte; L. J. Hannah, Cincinnati; G. F. Schlecht, Memphis, and J. A. Schlecht, St. Louis.

Zimmerman Back From Europe

Walter Zimmerman, export manager of Peerless Motor Car Corp., has returned from Europe where he studied business conditions in 10 countries. He reports demand increasing for American cars. Distributors were established in Belgium, Germany, Czecho-Slovakia and Austria.

Javens Appointed Manager

R. R. Javens has been appointed manager of the Alvord-Polk Tool Co., Millersburg, Pa. For the past three years he has been sales director of the company and has been instrumental in its extensive development.

Allyn Named Sales Manager

H. H. Allyn has been appointed sales manager of the Warner Patterson Co., Chicago. Mr. Allyn has been associated with the company since 1919 and will assume his new duties at once.

Anderson Vice-President

Dr. Robert J. Anderson, director of research of the Fairmont Mfg. Co., Fairmont, W. Va., was elected a vice-president of the company at the last meeting of the board of directors. The company makes aluminum products.

Baird Named Director

R. W. Baird, Milwaukee banker, has been elected a director of Chain Belt Co. to fill the vacancy caused by the death of H. O. Seymour. Directors re-elected were Donald Fraser, W. C. Frye, J. C. Merwin, C. R. Messinger, C. F. Messinger and E. L. Wood.

Graham-Paige Passes 1927 Output May 2

Exceeds 21,881 Cars on That Date—Scores New Day and Week Marks

DETROIT, May 7—Production by Graham-Paige Motors Corp. passed 21,881 units on May 2, the total for the entire year of 1927. The first four months of the year Graham-Paige cars have not only equalled last year's total production of the former models but have broken almost every record for production and shipping in the 18 years' history of the company.

April output was 8275 units compared with 8541 in May, 1925, the best previous month. On April 30 the company shipped 491 cars, exceeding by 84 the previous shipping record for one day. Shipments for the week of April 23-29, totaled 2195 or more than 10 per cent of the entire 1927 production.

The Graham-Paige monthly record for 1928 follows:

	1928	1927	Gain	Gain Per Cent
January ...	1,497	1,374	123	8.9
February ..	4,019	2,102	1,917	91.2
March	7,616	2,477	5,139	207.4
April	8,275	2,830	5,445	192.4
Totals....	21,407	8,783	12,624	143.7

Orders on hand for May will be sufficient to maintain the factory at full operating capacity.

Walter C. White Named President and Chairman

CLEVELAND, May 8—Stockholders of White Motor Co. voted to reduce the board of directors to 10 members from 12 and changed the date of the annual meeting from the first Saturday in May to the last Saturday in April. Windsor T. White and Thomas H. White, who retired as officers of the company several months ago, were not elected as directors. The other retiring members of the board were reelected.

At the organization meeting of the board, Walter C. White was reelected president and named chairman of the board of directors, the latter office having been filled by Windsor T. White until several months ago. The regular quarterly dividend of 25 cents a share was declared payable June 30 to stock of record June 15.

Wire Wheel Schedules 40,000

NEW YORK, May 8—The Wire Wheel Corp. of America is proceeding at top speed, according to official reports, and the May schedule calls for 40,000 units. Production for the year, up to April 30, was 144,570 units, the largest in the company's history for any similar period.

Durant May Schedule 13,000

NEW YORK, May 5—Durant Motors, Inc., has as its May schedule for its Elizabeth plant a minimum of 13,000 cars, an increase of 76 cars per day over April. The total number of Durant cars built during the last two months was 20,673, or an increase of 46½ per cent over any two previous consecutive months. T. S. Johnston, assistant to W. C. Durant, states there are more unfilled orders than ever before.

Veeder-Root Names Fourteen Directors

HARTFORD, Conn., May 8—Veeder-Root, Inc., the newly organized company in which is consolidated the Veeder Mfg. Co. and the Root Co., will have a board of directors of 15 members, 14 of whom have been chosen as follows: G. H. Anthony, F. F. Barnes, F. S. Chase, J. T. Chidsey, H. H. Conland, C. B. Cook, R. C. Coxhead, Brooks Leavitt, V. R. Leavitt, D. J. Post, C. D. Rice, C. T. Treadway, C. H. Veeder and F. E. Wolcott.

J. T. Chidsey, formerly president and treasurer of the Root company, will be president of the new company; G. H. Anthony will be vice-president in charge of manufacturing, and R. C. Coxhead, vice-president in charge of sales.

Weight Saving Overdone in Engines, Says Brewer

PHILADELPHIA, May 9—At the May meeting of the Pennsylvania Section of the Society of Automotive Engineers, Capt. R. W. A. Brewer of the Pitcairn Aviation Co. gave a talk on the Air-Cooled Radial Engine for Moderate-Priced Commercial Planes. Captain Brewer said it is now possible to design an aircraft engine of this type on the drawing board and carry out the design so the engine will function properly and give good performance characteristics.

Captain Brewer said that the general principle of weight saving might be stated in the following terms: Every part must be so designed that it operates at its maximum permissible stress the greatest possible proportion of the time, and so that the stress to which its material is exposed is of the kind to which that material is best adapted.

Aircraft engine design developed rapidly during the war, said Captain Brewer, but at that time engines were built to give performance regardless of cost. At present it is necessary for the designer to consider what he can get for what he proposes to build. The efforts to secure weight reduction had been overdone, in the speaker's estimation.

Harold De Mun

TOLEDO, May 7—Harold De Mun, 31, designing engineer for the Tillotson Mfg. Co., died here Tuesday after an attack of bronchial pneumonia. He was well known among automotive engineers as he had traveled extensively as a consulting and designing carburetor engineer.

Financial Notes

Chrysler Corp. reports net profit after taxes and other charges for the first quarter of the current year of $4,702,465. This is equivalent after preferred dividends to $1.57 on the common stock and compares with profit of $4,392,568, or $1.46 a share, for the corresponding period a year ago. Net current assets increased to a total of $43,688,000 as of March 31 after providing for the payment of preferred dividends for the balance of the year. Quarterly dividend of 75 cents was declared payable June 30, to stockholders of record June 16.

General Motors Corp. earnings for the first quarter of 1928 of $69,468,576 compare with $52,551,408 for the corresponding period a year ago the report today confirms. Of this, $67,117,657 is available for common stock. This is equivalent to $3.86 per share and compares with $2.90 a share a year ago. Net value of sales in the first quarter was $358,967,794 as against $291,448,824 in the 1927 quarter.

The Fifth Avenue Coach Co. reports gross revenues for the first quarter of the current year as $1,562,020 as compared with $1,603,203 a year ago. Chicago Motor Coach Co. shows gross revenues of $1,295,930 against $1,281,586 last year. Peoples Motorbus Co., St. Louis, shows a gross of $541,706 compared with $512,726. These figures were given out by John A. Ritchie, president of the Omnibus Corp.

Gabriel Snubber Mfg. Co. net income was $91,016 in the first quarter after all charges, equal to 45 cents a share on the 200,000 shares of Class A and Class B stock. This compares with $333,952 or $1.67 a share in the first quarter of last year and a deficit of $21,304 in the fourth quarter of 1927.

Standard Oil Co. of New York and subsidiaries report net profit for the year ended Dec. 31, 1927, as $11,414,887 after all charges. This is equivalent to 68 cents a share on common stock and compares with profit of $32,776,502, or $1.95 a share for the preceding year.

Marlin-Rockwell Corp. and subsidiaries report net profit after all charges for the first quarter of the current year as $450,616. This is equivalent to $1.26 a share on common stock and compares with $372,252, or $1.08 a share, for the corresponding quarter a year ago.

Briggs Mfg. Co. reports net earnings of $697,428 in the first quarter, equivalent to 34 cents a share on 2,003,225 shares of no par stock. This compares with $1,514,656 or 75 cents a share in the first quarter of 1927.

Mullins Mfg. Co. reports net profit in April of $83,047, against $61,167 in April last year. For the first four months, net before Federal charges was $252,240, against $211,248 in the corresponding period of 1927.

American-LaFrance & Foamite Corp. reports net profit after all charges for the first quarter of the current year as $151,221. This compares with a net loss of $322,412 for the corresponding period last year.

Campbell, Wyant & Cannon Foundry Co. reports net profit for the first quarter of $435,064, equivalent to $2.08 a share.

Steel Prices Easier as Season Advances

Sharp Competition Reported for Overhanging Business —Alloys Active

NEW YORK, May 10—While operation of some finishing mills catering to automotive consumers continues at a brisk pace, the gradual approach of the year's dull season in the steel industry is the cause of intensive competition among producers for what business overhangs the market. The recent dip in the price of blue annealed sheets from 2.10 cents to 2.00 cents upset the market for 12-inch and wider strips which compete with blue annealed sheets, and quotations show considerable irregularity.

There are rumors of 2.00 cents having been shaded in some blue annealed sheet sales. The commonly quoted 2.75 cents price for black sheets is also more or less subject to concessions. Cold-rolled fender strips, competing with full-finished automobile sheets, are reported to have been sold at as low as 4.10 cents, while not so many weeks ago 4.20 cents was considered the market. While takings of cold-finished steel bars are quantitatively not up to mills' expectations, the 2.20 cents price level is generally observed.

Automotive alloy steel manufacturers, well pleased with the way business has been going during the year's first four months, continue to operate at a satisfactory rate, although fresh orders are not being received at as lively a pace as was the case early in April. Automotive consumers continue to specify against bolt and nut contracts at a steady rate.

Pig Iron—Considerable second quarter iron is being shipped to automotive foundries, and in some instances, third quarter business has been placed at second quarter prices. The Michigan market is firm on an $18 basis.

Aluminum—Demand for piston metal continues good. The market is unchanged. Imports continue light but bonded warehouse stocks are still very comfortable. Remelted metal is moving in good volume.

Copper—Domestic consumers have shown much better interest in the market in the last few days. Connecticut deliveries of electrolytic continue to be quoted at 14¼ cents, with Middle West deliveries held at 14⅜ cents.

Tin—With the spot market rather dull, interest centers in the future course of the metal. Some American observers have recently come out with predictions of 45-cent tin, while in London all sorts of promotional schemes are being discussed to lift the price of this metal nearer to 60 cents.

Lead—Storage battery manufacturers show little interest in the market which continues quiet and unchanged.

Zinc—While sales are not very impressive, smelters are not eager to sell at below 6 cents, East St. Louis, considering the present state and temper of the ore market.

British and Dutch Seek Rubber Basis

WASHINGTON, May 9—Efforts to reach a solution of the dilemma of the British, Dutch and Belgium rubber industry were begun this past week by representatives of that industry meeting in Brussels, according to a cable to the Department of Commerce from its attache R. C. Miller at Brussels. The cable to the department on the meeting follows:

"It is said that no decisions were taken, but opinions expressed indicated a desire to find means of cooperating with British producers, with whom Dutch growers had previously (April 16) held discussions in London. It is also understood that the debates showed a desire to reach a solution not offensive to American rubber consumers. The delegates present at the meeting are to deliberate with their principals and another meeting is to take place in Holland in the near future.

Increased Rubber Sales Help Stabilize Market

NEW YORK, May 7—Steadiness seems to be pervading the crude rubber market following the demoralization resulting from the announcement that restriction was to be withdrawn, according to F. R. Henderson Corp. Heavier buying last week, believed to be largely by outside interests, resulted in a firmer tendency in prices and is regarded by the market factors as indicative that the lowest probable price levels have been reached. In the opinion of this company, the danger of overproduction, while real, is not of sufficient weight to bring prices below actual costs.

London stocks continue to decrease and now stand at 53,360 tons, the lowest since Jan. 15, 1927. Total arrivals in the United States during April were estimated at 34,500 tons and the preliminary estimate for May arrivals is placed at 29,000 tons. Gross exports from Malaya during April were 20,029 tons as compared with 29,041 tons for April a year ago, and 27,813 tons for March of this year.

Johnson Buys Out Washburn

ST. PAUL, May 7—Frank J. Johnson, senior partner in the American Hoist & Derrick Co., has taken over the partnership interest of W. O. Washburn. The company will be changed to a corporation with Mr. Johnson as president and treasurer; H. S. Johnson, vice-president in charge of sales, and Frederic Crosby, vice-president.

Carpenter to Head Spicer Toledo Plant

Plant Will Build Shock Absorbers, Universal Joints and Other Products

TOLEDO, May 7—The new plant of the Spicer Mfg. Corp., built here in the last five months at a cost of more than $500,000 for land, building and equipment, to make shock absorbers, universal joints and a number of other automobile parts, will be operated under the general management of R. A. Carpenter, vice-president of the corporation, it was announced here by Charles A. Dana, president.

Much of its product will go to motor car manufacturers in the Detroit district and will be trucked from the plant here. Direct rail connections are also available for both incoming and outgoing materials.

Mr. Dana announced that Joseph E. Padgett and John Henry would be in charge of purchases and scheduling and that J. V. Mellick would be financial officer for the Toledo plant.

At a dinner to welcome a number of new industries brought to Toledo in the last year, John N. Willys, president of Willys-Overland Co., spoke on behalf of manufacturers who have been here for many years and Mr. Dana spoke on behalf of the newcomers. Daniel H. Kelly, executive vice-president of Electric Auto-Lite Co., and the U.S.L. Battery Corp., was toastmaster.

It is understood that the Spicer company intends to center considerable of its manufacturing in Toledo and will move some of its plants from Eastern cities to be nearer the big automobile producing center.

Olsen Company Formed

KENOSHA, May 8—Olsen Mfg. Co. has been formed here to make dies, jigs and fixtures and to manufacture parts. The company has taken over the former Winther truck plant. Organizers of the company are H. P. Olsen, L. S. Olsen and R. E. Bussian.

Biflex Makes Detroit Change

DETROIT, May 5—The Biflex Products Corp. has closed its Detroit branch and has opened offices at 2-163 General Motors Bldg. The corporation has turned its service work over to its local jobbers and will continue to handle factory and original equipment work from its new office. Floyd A. Adams, sales manager of the equipment division, and his assistant, P. S. O'Leary, will continue in charge of the new office.

Tindall Continues Business

NEW YORK, May 7—Pickering & Tindall Co. has been dissolved and the business of manufacturers' sales engineers will be continued by W. L. Tindall at 33 West Sixtieth St.

Exports Take 10.8% of March Production

Total of 49,974 Sets New Record—First Quarter Total Also Higher

WASHINGTON, May 9—March exports of automotive equipment broke all previous records, both in number and value, according to figures just announced by the automotive division of the Department of Commerce. Exports for the month totaled 49,974 units valued at $49,954,163, an increase of 26.4 per cent over March, 1927, exports and an increase of 44.7 per cent over March, 1926, exports.

Largely through the increase in March, the exports for the first quarter totaled 115,986 units, which represented a gain of 17.9 per cent over the 98,941 units exported for the like period of 1927 and 40.6 per cent over the first quarter in 1926. The total valuation of all automotive exports the first quarter of this year was $118,547,682 as compared with $102,125,528 exported the first three months of last year. The average price per passenger car exported during March was $702, while the average for the first quarter was $731. The average value for truck exports during March was $694, and for the quarter was $687 per unit.

Revised production figures for March show a total of 307,408, of which 40,181 were exported or a ratio of 10.8 per cent. Truck production during March, the revised figures show, totaled 41,417, of which 9793, or 23.6 per cent, were exported. The consolidated figures for the quarter show that the total passenggr car production the first three months was 886,782 of which 85,771, or 9.9 per cent, were exported. The total truck production the first quarter was 100,250, of which 30,215 or 29.1 per cent, were exported.

Imports during March amounted to 43 units, valued at $124,329, which was slightly above the February total imports of 25 units, valued at $102,861.

2/3 of Swiss Cars From U. S.

WASHINGTON, May 9—American manufacturers of automobiles are exporting approximately two-thirds of Switzerland's imports, according to advices received by the Department of Commerce. March imports into Switzerland were 870 cars, of which 558 were supplied by the United States, 144 by France, and 128 by Italy. The department is advised that six months ago America's quota was less than one-third of Switzerland's automotive imports.

Scarab Engine in Production

DETROIT, May 7—Warner Aircraft Corp. is now in production on its radial, air-cooled 110-hp. Scarab engine which is standard equipment in the Stinson Junior and Cabinair planes. The engine was designed by W. O. Warner, vice-president and chief engineer, and has passed the Department of Commerce 50-hour test.

Officers of the company in addition to Mr. Warner are Newton Skillman, president and general manager; Nelson Hartwick, treasurer, and W. J. Jarvie, secretary. Directors include C. B. Bohn, W. B. Stout, W. Magruder Jones and the officers with the exception of Mr. Jarvie.

Ford Tax Appellants Win More Than Case Claimed

WASHINGTON, May 9—The nine former stockholders of the Ford Motor Co. this week won their $33,000,000 stock tax case before the Board of Tax Appeals, the board deciding the case against the government. The defendants and the amounts involved were as follows: James M. Couzens, $9,455,303; John F. Dodge estate, $4,337,295; Horace E. Dodge estate, $4,337,295; Horace H. Rackham, $4,347,295; Paul R. Gray, $2,277,079; David Gray, $2,277,079; Philip H. Gray estate, $2,277,079, and Rosetta V. Hauss, $84,404.

The board's decision really gave the former Ford stockholders more than they had fought for in their suit, holding that the fair valuation of the stock was at least $10,000 a share, or $510 higher than the defendants had fixed.

P-A Club Brougham $2,750

BUFFALO, May 7—Pierce-Arrow Motor Car Co. has added a five-passenger club brougham priced at $2,750 to its Series 81 line. Three color options are offered.

Kansas City Scraps 300 Cars in April

Used Parts Business Shows Gain as Company Starts Mail Order Sale

KANSAS CITY, May 5—The business of the United Automobile Wrecking Co., the dealer owned wrecking company in Kansas City, continues to grow in volume and in profits. The company handled more than 300 cars in April with parts sales also growing.

Tom H. Shugrue, manager of the company, says mail orders for used parts now are coming in from a wide territory. April mail orders increased approximately 100 per cent over March and the outlook is good. Local sales at the yard also are showing big gains.

Shipment of junk metal, not sold to Kansas City concerns, will be continued steadily. Mr. Shugrue says the company is contemplating the purchase of more machinery with a view of speeding up the yard's wrecking capacity.

Cleveland Has Record Day

CLEVELAND, May 5—New car sales for April were 4701 compared with 4772 for April, 1927. Used car sales for April this year were 12,304 compared with 12,750 for the same month in 1927. Records show that 316 bills of sales for new cars and 621 for used cars were filed on the last day. This was the largest day's total in the records of the Cleveland Automobile Manufacturers & Dealers Association.

Increased Demand for Small Cars in England Seen Following Adoption of Gasoline Tax

LONDON, April 25 (*by mail*)—Rumors in wide circulation for several days prior to the introduction of the budget yesterday by the Chancellor of the Exchequer proved to be more or less correct, for a duty on gasoline has been imposed at the rate of 4 pence per gallon, supplementing the existing tax on private cars of £1 per horsepower.

The object of the duty is not to secure additional revenue for road upkeep and reconstruction (to which purpose the horsepower tax is directed) but to finance a scheme of relief from local taxation to the extent of 75 per cent for productive industries. The duty covers all "light oils," thus including kerosene, though lubricating oils are specifically exempted. The duty does not apply to home-produced benzol or shale oil.

Although in some quarters vehement protests are being raised against the new duty, these emanate chiefly from bus and coach companies and users of trucks, whose payments in automobile taxes will be doubled in many cases; buses and trucks have hitherto been taxed on their seating capacity and unladen weight respectively.

A concession is made, to the extent of 20 per cent of the existing tax, in the case of trucks exceeding 2 long tons unladen and passenger vehicles (buses and coaches) seating more than eight people if such vehicles are run solely on pneumatic tires.

Opinions differ as to the effect of the additional impost upon the automotive industry, but the most widely held is that it will do no great harm, and that, particularly in the case of the most popular type of car among British motorists—less than 14 hp. by tax rating—no perceptible reduction of demand will be experienced.

One effect will be to encourage still further the use of small cars with high-efficiency engines; the horsepower tax has done that for years past, but, with need for the maximum economy in gasoline consumption owing to the duty, the small car will certainly increase in popularity.

Chapin Issues Call for Tax Remission

NEW YORK, May 5—Roy D. Chapin, president of the National Automobile Chamber of Commerce, has issued a bulletin to the members calling upon them to fulfill their pledge to reduce delivered price of cars by the amount of excise tax if the proposed repeal of that tax is passed.

"During the discussion which preceded the Senate finance committee vote," he said, "the charge was made by Under-Secretary of the Treasury, Ogden Mills, that the industry would absorb the tax reduction and that the consumers would not receive any benefit in the form of a lowered delivered price for cars or buses."

Answering this statement before the committee, speaking as president of the N.A.C.C., Mr. Chapin said: "I wish to reiterate the signed pledge of the entire motor industry that if this tax is repealed it will immediately be deducted from the delivered price of all cars. The finance committee accepted my statement as demonstrated by its vote."

Erskines Demonstrate Speed

ATLANTIC CITY, May 5—Two Erskine club sedans maintained better than mile-a-minute speeds for 1000 miles in a run at the speedway here under American Automobile Association observation. The first car averaged 60.97 m.p.h. and completed the run in 984 minutes, and the second averaged 60.716, completing the run in 983 minutes.

Coming Feature Issues of Chilton Class Journal Publications

June 10—A. E. A. Summer Meeting Number—Motor World Wholesale

June 23—Engineering Issue—Automotive Industries

Deere Tractor to Expand Production Facilities

WATERLOO, IOWA, May 5—Expansion of the John Deere Tractor Co. in this city, a subsidiary of Deere & Co., announced this week by Allen H. Head, vice-president and general manager of the tractor company, will double production of the plant and entail a building program which will extend over a two-year period. The development program will include several new factory units, including a 180-ft. extension of the machine shop erected only last year; installation of new machinery and equipment, rearrangement of the factory production line to facilitate and speed manufacture of raw materials into finished product, and development of new power resources.

Panama to Increase Taxes

WASHINGTON, May 9—A bill materially increasing taxes on automotive products to become effective Jan. 1, 1929, has been passed by the Panama Government and now awaits the signature of the President of that country, the Department of Commerce is advised.

French Road Work Less Than Car Tax

PARIS, April 20 *(by mail)*—Less than 10,000,000 francs in 1914, French revenue from direct automobile taxation jumped to 537,644,000 in 1927. In contrast to this, the amount spent on the maintenance of national roads was only 447,000,000 last year, or nearly 100,000,000 francs less than the amount received in taxation. Automobile associations are insisting on a greater proportion of the revenue from cars being devoted to highway maintenance. The following figures show that while in 1914 the roads were a charge on the entire nation, for the last three years automobile owners have paid the entire French road bill and have left a considerable amount in the hands of the treasury:

Year	Automobile Taxation. Frs.	Expenditure on Roads. Frs.
1914	9,990,479	37,144,000
1925	311,275,000	219,000,000
1926	462,139,000	296,110,000
1927	537,644,000	447,000,000

Overseas Club Hears Clark

NEW YORK, May 10—Business in the Far East was the topic of the monthly meeting of the Overseas Automotive Club held at the Hotel Astor this week. Atherton Clark of Black & Decker Mfg. Co., who has just returned from a year's tour of far Eastern countries, was the principal speaker. Other speakers included H. A. Beetle, assistant managing director, General Motors South America, Ltd., and Fred Barnhouse of Overseas Motor Service, who has lately returned from a Central America trip.

Calendar of Coming Events

SHOWS

American Electric Railway Ass'n, Public Auditorium, Cleveland..Sept. 22-28
American Society for Steel Treating, Commercial Museum, Philadelphia .....Oct. 8-13
Automotive Equipment Association, Coliseum, Chicago .....Oct. 22-27
Berlin .....Nov. 8-18
Brussels .....Dec. 8-19
*Chicago .....Jan. 26-Feb. 2
International Aeronautical Exposition, Grand Palais, Paris...June 29-July 15
Layback, Jugoslavia .....June 2-11
London, passenger cars .....Oct. 11-20
Milan .....May 17-31
National Standard Parts Association, Cleveland Auditorium...Oct. 29-Nov. 3
*New York .....Jan. 5-12
Oran, Algeria .....April 1-May 31
Paris, passenger cars .....Oct. 4-14
Paris, trucks .....Nov. 15-25
Prague .....Sept. 1-9
United States Good Roads Show, Des Moines .....May 28-June 1

CONVENTIONS

American Automobile Association, Bus Division Meeting, Cincinnati...June 27
American Automobile Association, Annual Meeting, Cincinnati....June 28-29
American Electric Railway Ass'n, Public Auditorium, Cleveland...Sept. 22-28
American Gear Manufacturers Association, Statler Hotel, Buffalo, N. Y., Oct. 11-13
American Iron and Steel Institute, Hotel Commodore, New York .....May 25
American Society for Steel Treating, Commercial Museum, Philadelphia .....Oct. 8-13
American Society for Testing Materials, Chalfonte-Haddon Hall Hotels, Atlantic City, N. J. .....June 25-29
Automotive Engine Rebuilders Association, Coronado Hotel, St. Louis, June 11-14
Automotive Equipment Association, Grant Hotel, Mackinac Island, June 17-23
Automotive Equipment Association, Coliseum, Chicago .....Oct. 22-27
National Association of Automobile Show and Association Managers, Before-Shows, Drake Hotel, Chicago .....July 26-27
National Association of Credit Men, Hotel Olympia, Seattle, Washington .....June 11-16
National Safety Council, National Congress, New York .....Oct. 1-5
National Standard Parts Association, Hollenden Hotel, Cleveland, Oct. 29-Nov. 3
Overseas Automotive Club, Luncheons, Hotel Astor, New York.....June 14
Society of Industrial Engineers, Rochester, N. Y. .....Oct. 17-19
United States Good Roads Association and Bankhead National Highway Association, Des Moines..May 28-June 1
World Motor Transport Congress, Rome .....Sept. 25-29

*Will have special shop equipment exhibit

A. S. M. E.

Cincinnati, Oct. 22-25 — Machine Shop Practice.
Cleveland, Sept. 17-20—Fuels.
Detroit, June 28-29—Aeronautic Division
Pittsburgh, May 14-17—Spring Meeting.
State College, Pa., June 14-16—Oil and Gas Power.

S. A. E.

National

Quebec, Chateau Frontenac.....June 26-29

Sectional

Chicago, May 15 — City Club — F. E. Moskovics.
Cleveland, May 14—Unstability of the Front End of Automobiles—J. F. Duby and F. F. Chandler.
Dayton, May 25—Induction Systems and Air Cleaners—C. S. Kegerreis.
Denver, May 15—Aircraft Engines.
Indiana, May 19 — Diesel Engines — Prof. A. E. Hershey.
Metropolitan, May 17—Bus Meeting.
Southern Cal., May 25—Modern Service Station and Garage Equipment for Reducing Cost of Operation, Maintenance and Repairs
Washington, May 25 — Racing — Wade Morton.

RACES

Altoona .....June 16
Atlantic City, direction South Jersey Racing Association .....May 30
Belgium .....Aug. 12
France .....July 1
Germany .....July 15
Great Britain .....Sept. 22
Indianapolis .....May 30
Italy .....Sept. 2
Spain .....July 29